CEPR Center for Economic and Policy Research

March 2016

Working Paper:
Domestic Outsourcing in the United States: A Research Agenda to Assess Trends and Effects on Job Quality

By Annette Bernhardt, Rosemary Batt, Susan Houseman, and Eileen Appelbaum*

Prepared for the Future of Work Symposium, U.S. Department of Labor, Washington DC, December 2015

Center for Economic and Policy Research
1611 Connecticut Ave. NW
Suite 400
Washington, DC 20009

tel: 202-293-5380
fax: 202-588-1356
www.cepr.net

* Annette Bernhardt is a senior researcher at the Institute for Research on Labor and Employment/Labor Center, as well as a visiting professor at the UC Berkeley sociology department; Rosemary Batt is the Alice Hanson Cook Professor of Women and Work at the ILR School, Cornell University. She is also a Professor in Human Resource Studies and International and Comparative Labor; Susan Houseman is a Senior Economist at the W.E. Upjohn Institute for Employment Research; Eileen Appelbaum is a Senior Economist at the Center for Economic and Policy Research.

Contents

Acknowledgements

The authors thank the Ford Foundation, the Public Welfare Foundation, and the Russell Sage Foundation for their support of this project. We also thank participants of a June 2015 working meeting, hosted by the Public Welfare Foundation, for their invaluable feedback on an earlier draft of this paper, including Jennifer Bair, Susan Helper, Michael Horrigan, Shawn Klimek, Paul Osterman, Andrew Reamer, Cathy Ruckelshaus, Eric Strasser and Timothy Sturgeon. Thanks also to Ruth Collier and Eric Frumin for their comments, and to participants of a UC Berkeley IRLE Seminar and the U.S. Department of Labor's Future of Work Conference, both held in December 2015.

Abstract

The goal of this paper is to develop a comprehensive research agenda to analyze trends in domestic outsourcing in the U.S. — firms' use of contractors and independent contractors — and its effects on job quality and inequality. In the process, we review definitions of outsourcing, the available scant empirical research, and limitations of existing data sources. We also summarize theories that attempt to explain why firms contract out for certain functions and assess their predictions about likely impacts on job quality. We then lay out in detail a major research initiative on domestic outsourcing, discussing the questions it should answer and providing a menu of research methodologies and potential data sources. Such a research investment will be a critical resource for policymakers and other stakeholders as they seek solutions to problems arising from the changing nature of work.

1. Introduction

Stagnant wages, growing inequality, and the deterioration of job quality are among the most important challenges facing the U.S. economy today. Although domestic outsourcing — firms' use of contractors, franchises, and independent contractors — is a potentially important mechanism through which companies reduce compensation and shift economic risk to workers, surprisingly little is known about the extent of this practice and its implications for wages and working conditions. Our review of the available research suggests that domestic outsourcing takes place on a much larger scale and affects many more workers than has been recognized — ranging from low-wage service workers such as janitors, security guards, warehouse workers, and hotel housekeepers to professional and technical workers such as programmers, health care technicians, and accountants. These trends are part of a structural change in the organization of production and work across firms that we suspect is profoundly affecting the quality of jobs and the nature of the employment contract for a significant portion of the American workforce (Weil 2014).

The goal of this paper is to develop a comprehensive research agenda to analyze trends in domestic outsourcing in the U.S. and its effects on the quality of jobs — including wages, benefits, employee skills and discretion at work, training and mobility opportunities, and job security — as well as

inequality across jobs. In the process, we review definitions of outsourcing, the available scant empirical research, and limitations of existing data sources. We also summarize theories that attempt to explain why firms contract out for certain functions and assess their predictions about likely impacts on job quality. We then lay out in detail a major research initiative on domestic outsourcing, discussing the questions it should answer and providing a menu of research methodologies and potential data sources.

In our view, such a research investment will be a critical resource for policymakers and other stakeholders as they seek solutions to problems arising from the changing nature of work. Domestic outsourcing has potentially important implications for the adequacy of existing employment and labor laws; the provision of health, pension, and other workplace benefits; and workplace enforcement strategies — all topics of current debates that could be informed by better data and research.

The Problem

Firms' choices regarding the organization of work and production play a critical role in shaping the skill requirements of jobs, the level and distribution of wages, and working conditions. This is well-documented in the sociological research on job quality (Kalleberg 2013), the industrial relations literature (Kochan, Katz, and McKersie 1986), and the management literature (Cappelli 1999). In particular, industry-based empirical research has documented how variation in employer strategies between firms in the same industry has led to variation in the quality of jobs (Appelbaum, Bernhardt, and Murnane 2003; Gautie and Schmitt 2010). That research typically focused on comparing work restructuring *within* the establishments of primary firms and showed how managerial choices to pursue value-added or cost-focused strategies often lead to differences in the quality of jobs for workers in the same occupation or with the same skill level.

We believe that the next step for understanding how firm strategies affect the quality of jobs and inequality is to study more systematically the reallocation of labor *across* organizations, as a result of firms contracting with other firms (or independent contractors) for goods and services. We refer to this process as domestic outsourcing or contracting out. Based on existing research and imperfect datasets, we suspect that firms have increased their use of outsourcing and that the effects of the reallocation of jobs across firms are at least as salient as the reorganization of work within firms that has been more typically studied (Weil 2014). If we are correct, then this raises the possibility that the rise of domestic outsourcing may have contributed to growing wage inequality, which would help to explain recent research findings that the majority of the increase in inequality has occurred between

firms (Barth et al. 2014; Handwerker and Spletzer 2015).[1] We also suspect that variation in firms' contracting decisions leads to quite different labor market outcomes, depending on such factors as ownership structures and market pressures, industry and occupation, motivation for contracting, and power relations between the primary firm and different tiers of contractors. For example, outsourcing overflow work in high or uncertain demand conditions or to take advantage of specialized expertise or technology may have different implications for worker outcomes than outsourcing of functions previously performed in-house in order to reduce labor costs.

Contracting out is difficult to define because, in the broadest sense, a large part of economic activity has always occurred through business-to-business transactions, as captured in macro-economic input-output models. Our observation, however, is that the scale and scope of contracting for goods and services production has changed in fundamental ways in recent decades, and that this change — and its implications for the quality of jobs — needs to be conceptualized more clearly and examined empirically. In the past, much of value creation occurred *within* large enterprises; in recent decades, however, the vertical disintegration of large corporations has led to more value creation through decentralized production networks, resulting in a larger proportion of productive activity occurring through business-to-business contracting.

While this transformation has been the focus of considerable research in its international form (the offshoring of work in global supply chains), until recently the domestic counterpart has received relatively little scholarly attention. This, despite some evidence suggesting that the growth in offshore outsourcing has been accompanied by growth in domestic outsourcing (Yuskavage, Strassner, and Medeiros 2008) and the fact that the majority of production in supply chains is still domestic or regional (Rugman, Li, and Oh 2009).

Specifically, we lack research on three fronts: the prevalence and different patterns of firm-level contracting within and across industries; the factors driving contracting out; and the relationship between these patterns and the quality of jobs at the workplace. First, inadequate and incomplete data mean that it is difficult to estimate the prevalence of domestic outsourcing of various business functions across sectors of the economy or the number of workers affected by it, though estimates are feasible for several specific industries and occupations (Dey, Houseman, and Polivka 2010). Similarly, our understanding of variation in contracting strategies within and across industries is thin, but initial research suggests that the stylized view of domestic outsourcing as a linear supply chain or a unidirectional process of economic fragmentation is inadequate (Gospel and Sako 2010).

1 Indeed, Goldschmidt and Schmieder (2015) show that the outsourcing of cleaning, food, security, and logistics services accounts for a sizable share of the growth in wage inequality in Germany since the 1980s.

Second, we lack a clear understanding of the factors that are driving domestic outsourcing — and by extension, whether firm decisions about what to retain in-house and what to outsource have changed over time. At a general level, market deregulation, heightened competition, technological change, and the rising influence of institutional investors and shareholders have put severe pressure on U.S. firms to reduce costs and headcount and increase quality and responsiveness to consumer demand. Some evidence suggests that firms have responded by focusing on their "core competencies" and outsourcing peripheral or low value-added tasks as well as higher value-added specialized functions. Advanced technologies have facilitated this process by allowing firms to outsource entire functions and more easily monitor contractors as well as employees who work virtually, leading to new forms of networked production and the rise of specialized firms. But few studies provide a more fine-grained empirical analysis of which factors are more salient for different industries or how these differences lead to distinct forms of outsourcing and contracting relationships — and in turn, differential outcomes for workers.

Third and most important, we lack robust research on how domestic outsourcing and the nature of the relationship between contracting firms affects wages and other dimensions of job quality, such as benefits, hours, workload, job stability, schedule stability, occupational safety and health, incidence of wage theft, and access to training and promotions. As we will see, some of the theoretical frameworks in this area predict that job quality and mobility opportunities will suffer when jobs that do not require a college degree are contracted out. Predictions are less clear for other cases — for example, jobs requiring professional, technical, or specialized skills, or those that are outsourced to large and diversified contractors. The impacts of the rise of on-demand platforms — such as Uber, TaskRabbit, and Upwork — are especially difficult to study because the work constitutes a collection of micro jobs ("gigs") that often supplement individuals' income from a main job; as a result, government surveys of workers are likely to miss some portion of this work activity.

In sum, our review of existing research suggests a substantial lack of knowledge about domestic outsourcing in the U.S. — its prevalence and the various forms it takes, its causes, and its effects on job quality and inequality.

2. Defining Domestic Outsourcing

In producing goods and services for final demand, firms may choose to perform certain functions in-house or they may contract with other firms for those inputs. For example, companies may perform manufacturing, transportation, research and development, IT services, accounting, or cleaning functions in-house, or they may outsource those functions by contracting with another firm. Changes in the mix of this "make or buy" decision over time have been variously labeled the vertical disintegration of the firm, the changing boundary of the firm, the growth of networked production, and so forth. We review different academic approaches to this question in the next section.

Specifically, *we define domestic outsourcing as firms or governmental entities located in the U.S. contracting with other firms or individuals located in the U.S. for the provision of goods and services*. In this definition, we include the outsourcing of functions that used to be performed in-house, new activities that have emerged as contract services from the start, and activities that have always been outsourced but where the scale or nature of the outsourcing has changed. Types of contractors include suppliers or vendors of goods (such as manufacturing inputs) or services (such as business services or staffing firms), franchisees, and independent contractors (such as freelancers, independent consultants, or on-demand platform workers).[2]

In order to capture important changes in the organization of work across firms and its implications for workers, our definition of domestic outsourcing is broad in scope. Given that research on this topic is at an early stage, we think it is prudent to take an empirical approach to identifying the range of forms that outsourcing may take, rather than eliminating certain categories from the start. This will help ensure that we capture the full extent of change in the organization of production and its impact on workers. We do not, for example, limit the definition of domestic outsourcing to purchased services, as in Yuskavage, Strassner, and Medeiros (2008).[3] Note that while we include purchases of both goods and services in our definition, not all contracting for materials and services inputs are of interest. For example, firms have always purchased office supplies, and absent any indication that the scope or nature of contracting for these products has significantly changed, the

2 We only include true independent contractors in this definition, though in practice, misclassification may be one of the strategies that accompany contracting out.

3 For other examples of related definitions, see Berlingieri (2014); Brown, Sturgeon, and Lane (2014); and Weil (2014).

contracting for office supplies would not be a good candidate for study. In contrast, there has been significant restructuring of domestic manufacturing supply chains with greater reliance on suppliers and subcontractors, and the changing relations of power between primary and contractor firms have important implications for the quality of jobs and inequality. In practice, researchers may choose to focus their analysis on a particular industry; certain types of outsourced functions, such as business support services; or one form of contracting, such as franchising.

Figure 1 distinguishes between several levels of analysis that research on domestic outsourcing should examine. A first distinction is between changes at the *firm level*, in the organization of production, and changes at the *job or workplace level*, in the organization of work (Grimshaw, Willmott, and Rubery 2005). Ultimately, we are interested in the effects of domestic outsourcing on job quality and workers, but this first distinction requires understanding changes in the *organization of production* at the firm level. Outsourcing is an action by a firm and should be defined and measured at that level; this is the first level of analysis. The empirical question then becomes, what is the impact of firm-level outsourcing decisions on the *organization of work* at the establishment level and, by extension, the quality of jobs. This is the second level of analysis. In addition, the potential growth of on-demand gig work as well as other forms of job fragmentation suggest a third level of analysis: *worker outcomes across jobs*. Here, the question is how workers are bundling multiple forms of income-generating work to achieve economic security, and how they are building careers across jobs and over time.

Relationship between Domestic Outsourcing and Nonstandard Work

An important feature of our framework is that it clarifies the relationship between domestic outsourcing and contingent or nonstandard work. Although there is no consensus on what constitutes "nonstandard" employment, to illustrate how it differs from work that has been outsourced, we use the categories identified in the BLS CPS Supplement on Contingent and Alternative Work Arrangements: direct-hire temporaries, agency temporaries, on-call workers, day laborers, contract workers performing work at the client's worksite, and independent contractors. By contrast, standard jobs follow the structure of the traditional employment relationship in the U.S.: workers are employees of the firm, and while employment in the U.S. is "at-will," there is an implicit contract of permanent employment.

FIGURE 1

Levels of Analysis for Understanding Domestic Outsourcing

Changes in the organization of production		Changes in the organization of work		Changes in worker outcomes across jobs
Firm level	→	**Job/workplace level**	→	**Worker level**
Increased use of: **Contracting out to other firms:** ▪ both on-site and off-site ▪ using subcontractors, temp agencies and other staffing firms, suppliers and vendors **Franchising**: treated here as a form of contracting out **Independent contractors:** use of true independent contractors (i.e., not misclassified) is treated here as a form of contracting out		Effects on: **Job quality:** wages, benefits, hours, workload, schedules, health and safety, incidence of wage theft, job stability, training, access to promotions, etc. **The employment relationship:** ▪ permanent or temporary ▪ coverage by employment and labor laws ▪ employer of record ▪ collective bargaining		Effects on: **Economic security:** bundling of multiple forms of income-generating work (e.g., standard jobs, on-demand gigs) **Career mobility:** ability to establish wage growth and employment stability over time

Source and notes: Authors' analysis.

As shown in **Figure 2**, jobs at contractor firms may be standard or nonstandard; the same is true for in-house jobs. This point is critical: Contractor firms may be small fly-by-night shops offering spot employment or large multinational corporations — such as Aramark or Securitas — offering standard employment contracts. As a result, there is nothing inherently contingent or nonstandard about jobs at contractor firms, and outsourcing's impact on the organization of work and job quality is not predetermined. We suspect that in some industries, nonstandard jobs may be more prevalent at contractor firms, as is the case in call centers (Batt, Holman, and Holtgrewe 2009), but establishing this relationship (and understanding its determinants) is an empirical question. Similarly, how other job quality outcomes (such as wages, benefits, hours, schedules, and workplace safety) map onto each of the employment relationships in the table is an empirical question.

FIGURE 2

Relationship between Contracting Out and Employment Status

	In-house jobs	Contracted jobs (both on-site and off-site)
Standard jobs	▪ Permanent employees	▪ Permanent employees
Nonstandard jobs	▪ On-call ▪ Direct-hire temporary	▪ Independent contractors, including on-demand platform workers ▪ Temp agency workers ▪ Leased/professional employer organization workers

Source and notes: Authors' analysis.

Examples of Domestic Outsourcing

Firms in every sector of the economy contract with other firms as part of their production process, as do governmental entities. The functions that are outsourced vary widely, and even a cursory sampling shows considerable diversity: human resources and R&D functions, building services, recycling, regulation and compliance, accounting, credit card collections, call centers, mortgage and check processing, information technology and data processing, logistics and transportation, machine maintenance, cable installation, food services and food processing, parts manufacturing and assembly, laundry, housekeeping, diagnostic labs and MRI scans, and clinical research trials.

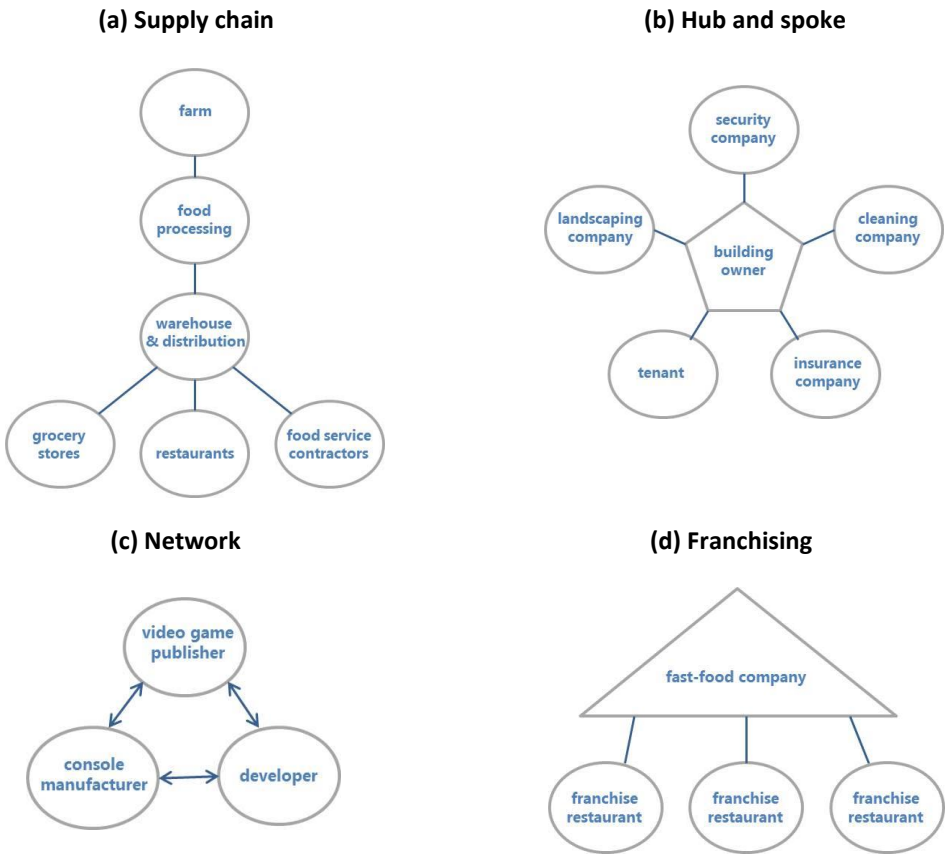
The structure of firm-level contracting relationships is similarly varied. Based on the existing research literature, we have identified several different examples, depicted in the figures below. The figures illustrate the variety and complexity of contracting structures and are meant to be suggestive, not exhaustive. Moreover, existing research does not document the prevalence of any of these forms; that is an empirical question for future research.

The archetypal image of firm-to-firm contracting is the linear supply chain. For example, in **Figure 3a**, we illustrate the food supply chain in the U.S., showing the classic line of contracting from agriculture all the way through to firms that sell food to consumers (which may be contractors themselves, as in the case of food services companies). But domestic contracting also includes a wide array of business-to-business transactions that are not well captured by the supply chain paradigm. In **Figure 3b**, we illustrate what Barenberg (2015) calls the "hub and spoke" model of contracting, where the lead firm (in this case a building owner) contracts with a number of other firms for on-site services such as cleaning and security and off-site services such as insurance. Note that one could flip this diagram and place a major business services

contract firm (such as Compass) at the hub and identify its contracts with a wide range of clients via the spokes. **Figure 3c** illustrates a non-hierarchical production network, featuring continuous collaboration between video game publishers, console manufacturers, and software developers and designers (Balland, De Vaan, and Boschma 2013). **Figure 3d** shows the classic pyramidal franchising structure that is prevalent in fast food and other industries (Weil 2014).

FIGURE 3

Various Contracting Patterns



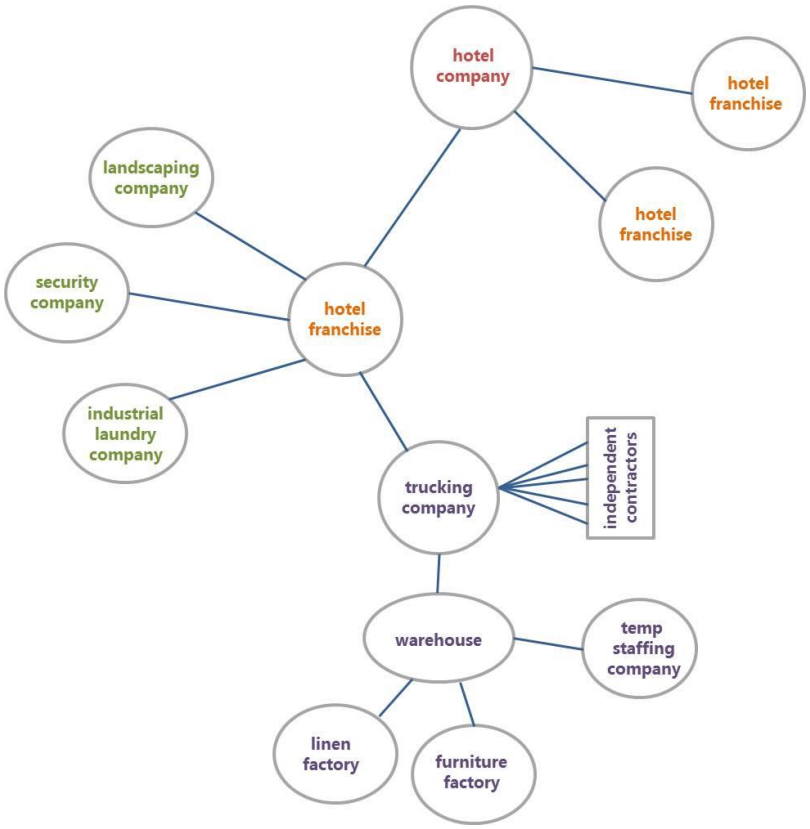
Source and notes: Modified from Barenberg (2015).

Finally, in **Figure 4** we use the hotel industry to illustrate how several different contracting structures operate together to deliver a set of final services to the consumer (adapted from Barenberg [2015, **Figure 7**]; see also Weil [2014]). The figure shows the franchising structure of a hotel brand, the services contracting of a particular hotel, the logistics contracting chain for delivering furniture and linens, and the use of independent contractors in the case of trucking and temp staffing firms in the case of warehouses. Note that this diagram could be expanded to include many more nodes of contracting, such as the use of staffing firms by the manufacturers or the contracting by the security services company with other clients besides the hotel franchise.

These descriptive diagrams raise a host of important questions, both about the contracting relationships themselves and about their impact on workers. How prevalent is domestic contracting and how has it changed over time? What factors are driving it and how does it vary by industry, occupation, firm-level strategies, and other organizational characteristics? And how do these different models of contracting out affect the organization of work within and across firm boundaries and, by extension, the quality of jobs, inequality, and other labor market outcomes?

FIGURE 4

Combination of Contractual Patterns



Source and notes: Modified from Barenberg (2015).

In the next three sections, we review existing theories and empirical research to identify what is known about the causes and consequences of outsourcing on labor market outcomes. In the final section, we propose a major research initiative designed to significantly strengthen the body of knowledge about this important but understudied economic trend.

3. Why Do Firms Contract Out, and What Explains Variation in Their Strategies?

Central to theories of the firm is why, or under what conditions, they choose to make versus buy goods and services. Social science research explained the vertical integration of firms over most of the 20th century by arguing that internal production was more efficient than contracting out. Today the challenge is to explain an observed shift towards outsourcing.

In this section, we review the recent literature on outsourcing from economics, management sciences, industrial relations, and sociology. Overall, we find that most scholars agree that domestic outsourcing has increased, albeit for different reasons. While some privilege the role of new technologies that facilitate outsourcing, others emphasize the role of heightened global competition or the role of deregulation of capital and labor markets that shift the balance of power from labor to capital. These changes have affected firms' make-or-buy calculations. This literature, however, does not provide sufficient fine-grained analyses about the factors driving change or why the use of outsourcing varies across specific industries, occupations, or business functions, and it largely fails to address the implications for workers.

Economic and Management Perspectives

To explain the make or buy decision, economic and management theories have focused primarily on the relative costs of internal versus external production. They explain recent changes in terms of technological advances that have reduced the relative costs of outsourcing.

Chandler, for example, focuses on relative *production* costs (Chandler 1977, 1990). He argues that advances in transportation and communications technologies at the end of the 19th century led to the rise of a mass market and to mass production. Firms achieved higher productivity via "economies of throughput" — by processing a large volume of inputs through dedicated, high fixed-cost machinery. From this perspective, vertical integration of the supply chain followed because firms needed a steady supply of inputs and stable consumer demand. In addition, managerial expertise was critical for internal coordination of processes and ongoing improvements in productivity, growth, and market share (Helper and Sako 2010, 403ff).

Mass production manufacturing was undermined in the 1980s, according to Chandler and others, by the rise of international competition and the availability of new production and management technologies. Flexible manufacturing technologies allowed factories to produce a greater variety of goods in small batches, enabling decentralized production in flexibly specialized firms (Piore and Sabel 1984). Japanese lean production, characterized by lead firms controlling manufacturing processes in a complex web of supplier firms (Dore 1986), achieved higher levels of innovation, lower time-to-market for new products, and higher quality and productivity than mass production models (Jaikumar 1986, MacDuffie 1995). U.S. firms tried to emulate lean production by increasing their use of contracting out and reconfiguring their supply chains.

More broadly applicable across service as well as manufacturing industries is the transactions cost framework (Coase 1937), which explains the make or buy decision on the basis of relative *transaction* costs. Williamson (1975, 1985) argues that the vertically integrated firm emerged in the 20th century because hierarchies are more efficient than markets. Hierarchies minimize the costs of transactions between buyers and sellers because we live in a world of bounded rationality (limited ability to process information), asset specificity (nonstandard, idiosyncratic capital goods or skills that are especially valuable in the relationship), and individual opportunism (self-interested behavior with guile). Consequently, by retaining production in-house, firms minimize transaction costs and have more mechanisms to control or limit opportunism.

In this framework, supply-side changes that reduce the cost of market transactions relative to internal hierarchies explain the recent vertical disintegration of firms. New information and communications technologies (ICT) have facilitated outsourcing and the decentralization of producing goods and services because ICT lowers the costs of information processing and coordination of work across organizational boundaries, thereby reducing the cost advantages of internal production. ICT also enhances firms' capabilities to monitor and enforce contracts with external suppliers, thereby reducing the relative advantages of hierarchy. ICT allows firms to achieve control over productive activities — the advantages of vertical integration — without assuming the risks of actual ownership or the inflexibility of bureaucracy. Blois (1972) refers to this as "vertical quasi-integration," and others as "virtual integration."

These supply-side arguments are typically combined with demand-side arguments — that reductions in product market regulation have heightened cost competition and increased incentives to outsource based on cost. These changes include not only trade liberalization in global markets but also deregulation since the 1970s in service industries such as airlines, telecommunications, transportation, banking, and health care.

Academic scholars, however, have not only tried to *explain* changes in firm behavior, many have actively *promoted* new decentralized organizational models, especially advocates of agency theory and core competency theory. Inspired by Milton Friedman's (1970) argument that profit maximization is the sole purpose of the corporation — and reacting to the poor profitability of large conglomerates in the 1970s — a generation of agency theorists provided the rationale for breaking up large corporations and selling off or outsourcing less-profitable operations.

Large publicly-traded firms, they reasoned, suffer from principal-agent problems because dispersed shareholders (the principals) are not able to hold opportunistic managers (the agents) sufficiently accountable -- allowing them to make decisions that favor their own interests at the expense of shareholders (Jensen and Meckling 1976; Jensen 1986). As a result, managers could engage in a variety of behaviors that are assumed to interfere with maximizing profits and shareholder value, such as building large conglomerates or negotiating better wages and working conditions.

As Weil (2014) and Goldschmidt and Schmieder (2015) have pointed out, these large companies tended to offer jobs with higher wages and employment security due to union contracts (Card, Lemieux, and Riddell 2004), internal equity concerns (Weil 2014), or efficiency wage considerations that higher wages and better treatment of workers would elicit greater labor productivity (Akerlof and Yellen 1990; Rees 1993). In the U.S., where the union-non-union wage gap is large, firms faced with increased competition or shareholder pressures have incentives to reduce costs by outsourcing work to lower-cost or non-union providers.

Agency theory provides the rationale for eliminating these uses of corporate earnings, including the rent sharing of firm profits with workers. In this view, retained earnings should be returned to shareholders rather than spent on business expansion or above-market wages. Less-profitable operations should be sold off, with returns going to shareholders. Thus, agency theory provided the rationale for breaking up corporations — as exemplified by corporate raiders in the 1980s — who bought up undervalued companies with poor stock market performance and sold off or closed divisions to increase shareholder value. These strategies soon became widespread.

While agency theory provided the overarching argument for maximizing shareholder value, it did not translate this theory into specific business strategies. That was taken up by management strategists who argued that firms could achieve "competitive advantage," and hence higher profitability for shareholders, by focusing on their "core competency" — that is, what they do best. In this view, the diversified conglomerate of the 1960s and 1970s unraveled because it lacked sufficient focus and the competence to effectively manage diverse productive activities. Firms, it is

argued, should compete by pursuing a single-minded business strategy — for example, as a low-cost producer or by providing differentiated products (Porter 1985). Firms become "best in class" by focusing resources and talent on their core competencies and eliminating other lines of business (Prahalad and Hamel 1990). Firms achieve competitive advantage by capitalizing on their unique resources (Penrose 1959) and investing in difficult to imitate human resource (HR) systems that enhance human and social capital (Barney 1991).

The core competency argument justifies organizational restructuring at two levels: the business unit level and the operational or task level. At the business unit level, firms are admonished to sell off those businesses that are not best in class — hence, for example, hiving off entire product divisions or business functions. At the operational level, management scientists argue that firms should assess the "strategic value-added" of each task in their core business units and outsource lower valued-added activities as well as ancillary services, such as routine HR administration or customer service operations (Lepak and Snell 1999). This line of reasoning justifies a specialized division of labor, with more value-added or knowledge-producing activities retained in-house and less-value-added activities outsourced.

The knowledge-based view of the firm reaches similar conclusions (Kogut and Zander 1992). Firms should keep in-house those tasks or capabilities that are complex and difficult to codify or that the firm already has and believes will contribute to innovation or higher economic value. It will outsource tasks that are easily codifiable or tasks in which other firms have already developed expertise.

Again engineering and management scholars cited advances in technology and the digital revolution to explain why the ability to codify and standardize knowledge — and hence outsource it — has increased. They have elaborated the design principle of "modularity" — that is, the decomposition of complex systems into separable design elements. This enables firms to codify knowledge of a production process, identify separable parts, and standardize the interfaces. When done effectively, modularity reduces costs, increases the speed of innovation, and increases returns to specialization (Ulrich and Eppinger 1995; Fixson 2005). It also reduces the probability of contractor opportunism given the ability to standardize and specify product design features (Helper, MacDuffie, and Sabel 2000). While modularity has focused on goods production, codification of information and knowledge applies equally to business functions and service activities such as business process outsourcing, law, accounting, banking, and other customer-facing operations. Deblaere and Osborne (2010) argue that services have been broken into their components and optimized through automation and standardization. This, they contend, has created economies of scale that make external provision of inputs more efficient than internal production.

The rise of the computer industry and the digital revolution also help explain the rise of a new model of business organization — a horizontally specialized structure as opposed to a vertically integrated one. Saxenian's (1996) research demonstrating the superior performance of networked firms in Silicon Valley compared to hierarchical firms in the MIT corridor is illustrative, as are Powell and colleagues' (1996) study of the U.S. biotech industry and a number of studies of the ICT industry (Fine 1998; Kraemer and Dedrick 2002; Fields 2004). Firms in other industries have tried to apply this networked form to their own organizations.

Institutional and Political Explanations

In contrast to the economics and management literatures, other scholars have advanced institutional and political explanations for the demise of the vertically integrated firm. From these perspectives, U.S. corporations grew and prospered during most of the 20th century based on a managerial business model in which experienced managers with industry-specific expertise were the source of on-going improvements in firm performance (Chandler 1977). Separation of ownership from organizational control ensured that managers could focus on long-term productivity growth rather than short-term shareholder profits, and long organizational careers reduced opportunism by tying managers' individual fortunes to firm outcomes (Lazonick 1992).

That model depended on banking and securities laws put in place in the New Deal, as well as on labor market regulation and union cooperation. Internal labor market theory argues that large employers established internal administrative rules and provided benefits and promotion opportunities to secure a loyal workforce and to ensure labor peace; unions negotiated seniority clauses and internal job ladders to enhance job and income security (Doeringer and Piore 1971; Jacoby 1985). Non-union firms mimicked union rules (Foulkes 1980).

That model began to unravel in the 1960s and 1970s due to a series of institutional changes both inside and outside of the firm (Davis 2009). Internally, U.S. corporations increasingly focused on growth through mergers and acquisitions, giving rise to diversified conglomerates. Under this "portfolio model of the corporation," the frequent buying and selling of businesses created a new norm of viewing companies as bundles of assets to be bought and sold (Hayes and Abernathy 1980). Decision-making power shifted from line managers with production expertise to chief financial officers, who bought and sold units based on their profitability (Fligstein 1990; Lazonick 1992; Zorn 2004).

This concept of the firm as akin to Lego pieces that can be assembled and reassembled based on short-term profit goals has received growing attention. Some scholars particularly emphasize the deregulation of capital markets and labor markets from the 1970s on to explain the vertical disintegration of the firm and the growth of outsourcing (Appelbaum and Batt 2014). In this line of reasoning, financial market deregulation gave investors and stockholders more power to pressure firms to maximize shareholder value, and the lax enforcement of labor laws and the decline of union power freed them from prior constraints to do so.

The shift in the relative power of capital and labor encouraged firms to maximize profits in part by selling off business units or outsourcing less-profitable parts of the value chain. Firms exited low-margin activities and retained those with high margins to increase earnings that could be returned to shareholders via higher dividends or stock buybacks, which increased share price (Lazonick 2014). CEOs would implement these strategies because their own pay was increasingly tied to stock market performance (Jensen and Murphy 1990). Stock option pay represented 20 percent of CEO compensation in 1980 but 50 percent in 1994 (Hall and Liebman 1998).

Capital market deregulation occurred through a series of legislative changes. The power of institutional investors to influence corporate behavior increased with passage of the Employment Retirement Income Security Acts (ERISA) of 1974 and 1978, which allowed pension funds and insurance companies to invest in stock and high risk bonds for the first time (Useem 1996; Gompers and Metrick 2001; Zorn et al. 2005: 274). Some argue that the rise of institutional shareholders in the 1980s was critical in shifting the balance of power from corporate stakeholders (managers and workers) to shareholders (Donaldson 1994).

Similarly, in the 1980s, relaxed enforcement of antitrust and securities laws and the elimination of state antitakeover laws (Jarrell 1983) gave corporate raiders greater leeway to engage in hostile takeovers and sell unprofitable businesses or increase outsourcing to improve profit margins. To hedge against hostile takeovers, corporations themselves started engaging in these strategies (Holmstrom and Kaplan 2001: 132-4).

Further deregulation of banking since the 1990s facilitated the growth of financial intermediaries such as private equity firms that engage in leveraged buyouts and activist hedge funds that are able to overthrow CEOs or force changes in business strategies based on ownership of a relatively small percent of a company's stock. These actors often insist on the sell-off of assets, divestment of less-profitable establishments, and greater use of outsourcing (Appelbaum and Batt 2014; Brav, Jiang, and Kim 2015).

Labor market deregulation occurred as global labor markets expanded (Freeman 2005) and as U.S. labor laws went unenforced. The decline in union density and power allowed firms to outsource work either to rid themselves of expensive and time-consuming union contracts or to prevent unions from organizing new units. De-unionization in manufacturing also diminished those unions' resources for organizing new unions in emerging sectors within the U.S.

Similarly, deregulation of service industries with traditionally high union density also contributed to de-unionization, the intensification of competition from non-union competitors, and the ability of firms to shift work to contractors. Examples of this pattern have been documented in trucking (Belzer 1994; Milkman 2008), construction and building services (Milkman 2006), and call centers (Batt, Holman, and Holtgrewe 2009: 458ff). Organizing campaigns in service industries have yielded single-digit union density in almost all cases. Union administrative failure (Piore 1989) and inter-union conflicts have also led to the decline in union power. Beyond voiding or minimizing the power of unions, companies may use outsourcing to avoid accountability for other U.S. labor and employment laws, including wage and hour, prevailing wage, workers' compensation, health and safety, pension, and anti-discrimination statutes (Weil 2014).

In sum, academic theory and research points to an array of explanations for the vertical disintegration of firms across a wide range of industries, as well as why new forms of business organization based on interfirm networks are emerging and becoming institutionalized. While much of the research and theorizing has focused on globalization and the rise of global supply chains, none of the theories identified here are specific to that international process. Rather, they attribute outsourcing to heightened competitive pressures — whether in traded or nontraded goods — and to technological, organizational, regulatory, and political changes that affect how firms decide where to produce goods and services.

What Explains Variation in Outsourcing?

While there is a growing consensus that more networked forms of business organization have emerged, academic research offers few insights into why the prevalence and forms of outsourcing vary across different industries, firms, or productive activities. Below we identify a few approaches that provide a starting point for thinking about how and why firms vary in their approaches to outsourcing.

Two frameworks take an economic or functionalist approach, arguing that variation in how firms use outsourcing depends on the product market in which they compete and their organizational

capabilities. One framework identifies three functions of outsourcing (Holmes 1986). First, if firms operate in markets with high or uncertain demand fluctuation, they may outsource overflow work (capacity contracting) to meet increases in demand without investing in expensive equipment that may lie idle during economic downturns. Second, if the production of particular products requires specialized inputs, they may take advantage of contractors who have particular expertise or sophisticated technology (specialization subcontracting). Third, firms may choose, for a variety of reasons that are not clearly understood, to turn over large parts of the production process to an independent supplier (supplier subcontracting). Each of these strategies shifts risks to contractors and has the potential to both improve revenues for the firm (via higher quantity or quality of production) and reduce costs (due to contractor efficiency, absorption of risk, investments in technology, or payment of lower wages in non-union settings). In this framework, variation in outsourcing depends on the particular characteristics of goods or services produced and differences in the competitive conditions of markets. Hypercompetitive and volatile markets or industries characterized by rapid innovation are more likely to use all three types of contracting.

A second framework for why firms vary in their use of outsourcing is based on specific product characteristics (Gereffi, Humphrey, and Sturgeon 2005). This framework integrates insights from transaction costs economics, production networks, and dynamic capabilities (organizational learning) to create a typology of five different types of networks — market, modular (turnkey), relational, captive, and integrated. Gereffi and colleagues argue that variation depends on three factors: the complexity of information and knowledge to be transferred across firm boundaries, the extent to which this information and knowledge can be codified and transferred, and the capabilities of contracting firms and individuals.

Variation also arises because industries and firms differ in the point at which they begin to outsource parts of production and how much they learn over time. Research on organizational learning and dynamic capabilities shows that firms may produce the same good with different production costs (Teece 1988; Teece, Pisano, and Shuen 1997; Kogut and Zander 1992), and as new technologies or capabilities change, firms' make or buy decisions can change as well (Langlois 1992). As suppliers learn over time, they can increase the scale and scope of what they do, develop greater sophistication, and take on increasingly complex processes or bundled services. As primary firms become more confident of the quality and reliability of their services, the use of suppliers is likely to become permanent or institutionalized (Sturgeon 2002; Saxenian 2005). Gereffi and colleagues argue more generally that this learning process is likely to lead to a permanent shift away from hierarchical and captive forms towards relational, modular, and market forms.

Other management scholars and sociologists argue that variation in supplier networks is shaped by the level of trust between partners. The repeated interactions of people in interfirm networks over time should create norms of trust that reduce the likelihood of individual opportunism (Powell 1990; Uzzi 1996). Higher trust leads to better performance outcomes (MacDuffie and Helper 2006), suggesting also that networked firms should become stable or institutionalized over time. The argument that trust matters in relational contracting contrasts sharply with modularity arguments in which trust is not essential (Helper, MacDuffie, and Sabel 2000; Sturgeon 2002).

The structure of governance may also help explain variation in interfirm networks and outcomes among contracting parties (Bair 2009). By governance we mean the set of rules and practices that establish the balance of power and control among the lead and contractor firms. This includes not only contractual obligations between the parties as set forth in legal agreements, but also the ways in which the various actors in the contracting network exert control over other participants. An analysis of who holds the power of decision-making and monitoring and enforcement of rules should help explain how value is created, appropriated, and distributed among actors in the production network. Variation in the governance structure, then, should also have important implications for the quality of jobs for workers, depending on where in the production network they are employed.

Industrial relations scholars also emphasize the importance of relationships of power to explain variation in contracting — whether, for example, regulations or unions constrain managerial choice of business strategy. Variation in labor institutions, regulations, and union power shape firm strategies for achieving labor flexibility, the extent of use of contingent or temporary workers, and the use of outsourcing (Houseman and Osawa 2003; Doellgast, Sarmiento-Mirwaldt, and Benassi 2016). Where unions have sufficient bargaining power, they are able to limit outsourcing and negotiate the terms and conditions of its use (Doellgast, Sarmiento-Mirwaldt, and Benassi 2016). Where unions have weak bargaining power, by contrast, firms may actually outsource more in order to rid themselves of union contractual requirements and costs, as in the case of Delphi Automotive Corporation, where 30,000 union jobs were offshored when private equity owners took control (Appelbaum and Batt 2014). Thus, union presence and power provide one explanation for why firms that compete in the same markets may nonetheless have different approaches to the use of outsourcing.

In sum, existing research points to several factors that have driven the overall growth in outsourcing, the break-up of vertically integrated firms, and the rise of new networked forms of production. Technological advances and management innovations have reduced the monitoring and coordination costs of arms-length transactions. New economic and management theories have

promoted the alignment of managerial and shareholder interests to focus on profit maximization, leading firms to focus on high-value-added core activities and to sell off or outsource lower-value-added processes. And the growth of competitive pressures on firms has threatened margins and provided greater incentives to cut costs, in part via outsourcing. At the same time, specific research is thin regarding variation in the extent of outsourcing and the form it takes across industries, firms, and different productive activities. These questions are at the cutting edge of new research on outsourcing and will require consideration of a variety of economic, political, and legal factors.

4. The Impact of Domestic Outsourcing on the Quality of Jobs

Empirical research on the effect of outsourcing on the quality of jobs is limited. In the literature reviewed in Section 3, the outcomes of interest are organizational performance, competitiveness, or firm survival. Clearly, however, changes in the organization of production at the firm level will spill over into changes in the organization of work, with implications for HR management and job quality (Rubery, Earnshaw, and Marchington 2005).

Theories about why firms choose to outsource do, however, offer implicit predictions for what is likely to happen to the quality of jobs, including pay, benefits, and working conditions such as health and safety. Most suggest that job quality will be lower in outsourced operations, although there is reason to expect variation as well. This section presents some working hypotheses about how outsourcing affects the quality of jobs and inequality, the causal mechanisms at work, and the scant empirical evidence on these questions.

The economic and management literatures — including transactions costs, core competency, resource-based theories, and global value chain literatures — suggest that firms will retain in-house more complex jobs and outsource those involving lower-value-added tasks with routine to mid-range skill requirements. Tasks that are complex and require firm-specific skills will be retained in-house, in this view, because of the challenge of monitoring and enforcing contracts. The more granular arguments in the modularity literature clarify that these tasks are not amenable to codification and standardization, and hence not easily outsourced without sacrificing cost and quality. The resource-based view argues that higher-value-added tasks associated with core competencies must be retained in-house to preserve the firm's source of competitive advantage, and

the knowledge-based view argues that these unique resources are the firm's lifeline to innovation and sustainability.

In these scenarios, outsourcing changes the rules for determining wages for low-skilled workers, from internal administrative rules in large firms to market-based pricing across firms. Internal equity norms or efficiency wage considerations lead large primary firms to compress the wage structure. When low-skilled tasks are outsourced, internal equity norms are broken and workers in those jobs receive pay that more closely reflects the market wage for the specific tasks they do. Workers are sorted into higher-paying jobs in primary firms and lower-paying jobs in contractor firms according to differences in skill levels. Contractors supplying low-valued-added or routine services also face tougher competitive conditions as barriers to entry are low and price-based competitive bidding is common.

Recent empirical studies provide some evidence that this process of outsourcing lower-skilled jobs results in substantial pay and benefit penalties in janitorial and guard services (Dube and Kaplan 2010). Similarly, in their study of logistics, cleaning, security, and food services functions using German administrative data, Goldschmidt and Schmieder (2015) document the dramatic rise in outsourcing of these functions and the substantial decline in wages relative to similar jobs that were not outsourced, contributing to the rise in German wage inequality since the 1980s. These studies attribute the lower wages for contractors to the loss of firm-specific rents and to primary firm strategies to lower labor costs.

Batt and colleagues examine the impact of outsourcing on call center jobs based on establishment-level survey research (Batt, Holman, and Holtgrewe 2009). Regression analyses show systematic differences between union, non-union in-house, and outsourced operations, with the latter scoring the lowest on virtually all dimensions of job quality, including substantially lower pay, benefits, and discretion at work; they also show greater use of electronic monitoring and part-time and contingent work (Batt, Doellgast, and Kwon 2006; Batt and Nohara 2009). Doellgast and colleagues (2016) find similar wage penalties in studies of call center outsourcing in Europe.

Weil (2014) argues that the quality of jobs and wages are likely to be worse in outsourced operations because small contractors are more likely to violate labor and employment laws. Typically they are less knowledgeable about what the law requires, have unsophisticated (or no) human resources function, and have greater incentives to violate the law because their profit margins are thinner. Small firms may also bargain contracts with lead firms that set unrealistic performance requirements. Ji and Weil (2015), for example, find that non-compliance with minimum wage and overtime regulations are much higher in franchisee than in company-operated outlets and attribute this to

differences in the profit models of the two entities. Whereas franchisors earn their money through a royalty fee based on revenue volume, franchisees depend on profit margins and have greater incentives to squeeze labor costs.

Available evidence indicates that contracting out also is associated with a higher incidence of workplace injuries. For example, U.S. research has found much higher injury rates among contract workers in petroleum (Rebitzer 1995), mining (Muzaffar et al. 2013), and among staffing agency workers in a variety of occupations (Morris 1999; Foley et al. 2014; Smith et al. 2010). Particularly in triangulated employment relationships, responsibility for safety training may be unclear and fall through the cracks. In addition, employers with unsafe workplaces may turn to independent contractors or contract companies for staffing in order to shed legal liabilities and high workers' compensation insurance costs, which are experience rated.[4]

Finally, reputational effects, even for large contractors, may be less important for franchisees or subcontractors than for primary firms that compete on their brand. And the lax enforcement of labor and employment laws in the 2000s created a permissive context for contractors to evade or violate labor regulation (Bernhardt, McGrath, and DeFilippis 2007; Bernhardt et al. 2008).

The question of whether these arguments also apply to outsourcing of higher skilled or "core" workers has not been tested. Weil argues that the downward pressures on wages and working conditions in outsourced operations should apply more generally, based on the assumption that the lead firm has asymmetric power relative to suppliers or contractors. This allows the lead firm to set the terms and conditions in contractual agreements and create a highly competitive bidding process that puts downward pressure on profit margins and, in turn, wages (Weil 2014: 15, 100). Compared to primary firms, small contractor firms also face higher costs of capital and have less control over contract duration or renewal; this contractual uncertainty may translate into greater job insecurity for workers and greater use of contingent labor by contractor firms. These arguments, it should be noted, do not take into account cases where contractor firms may be in a strong bargaining position due to their large size and the range of services they provide or because they supply specialized expertise or technology.

Where large lead firms dictate terms and conditions to smaller contractor firms, domestic outsourcing can lead to greater inequality in two ways. First, if it sorts higher-skilled and lower-skilled workers into (large) primary and (small) contractor firms, then inequality between different skill or occupational groups is accentuated because lower-skilled workers are removed from the

4 See Boden, Spieler, and Wagner (2016) for an expanded discussion of the issues and empirical evidence on contracting out and workplace health and safety.

internal wage structures of large firms. The resource-based view of the firm hints that inequality between in-house and outsourced jobs may be even greater than one would expect based on core competency and human capital arguments alone. In effect, the "human resources" retained in-house are quasi-fixed or valuable assets that require on-going investment. Core workers in primary firms benefit not only from higher pay but also training and participation in "high involvement work systems" that offer more opportunity (Appelbaum et al. 2000). By contrast, routine labor in outsourced firms will be viewed as a variable cost to be minimized and is unlikely to receive training investments. If outsourcing distributes workers with the *same* skills and abilities into primary (large) and contractor (small) firms, then it is also likely to increase within-group inequality by removing workers from internal labor markets in large firms (Cappelli 1999; Bernhardt, Dresser, and Hatton 2003).

Findings from several recent studies suggest a general relationship between increased domestic outsourcing and rising inequality, but do not provide enough detail to sort out the causal mechanisms. Davis and Cobb (2010) find that inequality is inversely related to the proportion of workers in the largest firms. A recent study using the Longitudinal Business Dynamics data base and the Longitudinal Employer-Household Data (LEHD) finds that much of the growth in earnings inequality in the United States since the 1970s is accounted for by increased dispersion in earnings across establishments (Barth et al. 2014). Similarly, Handwerker and Spletzer (2015) and Handwerker (2015) use data from the Occupational Employment Statistics program to show that growth in the occupational concentration of workers in establishments accounts for a large share of the growth in wage inequality.

In sum, these literatures provide economic, strategic, and political explanations for the existence of lower-quality jobs in outsourced operations as well as for increased inequality. Existing empirical findings are consistent with this argument for low-wage workers, but only a small number of empirical studies have been carried out, and much more research is needed.

Variation in Outsourcing and the Quality of Jobs

Other lines of research question the association between outsourcing and low job quality. The literature on "strategic" or managerial choice has demonstrated that firms may compete successfully in the same market on the basis of radically different business and production strategies (Cappelli 1999; Berger 2005). Typologies of different types of contracting relations (Gereffi, Humphrey, and Sturgeon 2005) suggest that the labor conditions that result from each approach may be different. And a recent paper (Lakhani, Kuruvilla, and Avgar 2013) presents a straightforward linear mapping

between contractor types and employment systems, with a market-based model (relying largely on contracting out) offering the lowest levels of skills and job stability and the hierarchical model (with internal labor markets) offering the highest. No empirical tests of this framework exist, although case studies of U.S. multinational firms show that closer and longer-term relations with offshore suppliers tend to produce fewer labor violations (Locke, Qin, and Brause 2007; Locke 2013). These types of studies are suggestive, but they provide little guidance regarding the impact of outsourcing in the United States on the quality of jobs and inequality.

The literature on trust and collaboration in supply chains similarly carries an implicit prediction that variation in contracting relations along these dimensions should lead to variation in employment systems. Some research has shown that trust and collaboration are key to sustainability and high performance in supply chains (Dyer and Chu 2000; MacDuffie 2011); and arguably, greater stability among contractors may well benefit workers via enhanced employee training, autonomy, and employment stability. But no empirical research has tackled this question.

Research on organizational learning or dynamic capabilities also suggests that working conditions will vary in contractor firms, in this case based on their experience and development over time. As suppliers grow and become more sophisticated, the organizational capabilities in the supply chain can be redistributed (Jacobides 2005; Jacobides and Winter 2005; Gereffi, Humphrey, and Sturgeon 2005). As contractors take on more high-value-added tasks, the human capital requirements of jobs should increase and, in turn, lead to higher pay for workers. But again, these ideas are untested.

The specific terms of contractual agreements also matter. Lead firms set forth explicit and detailed specifications in legal agreements with their contractors, and these requirements and the incentive structures they create vary substantially across different types of contract or franchising agreements (Weil 2014: 63-79). Any theory of the impact of domestic contracting on the quality of jobs should examine the terms and conditions of vendor contracts; the relative asymmetry between the primary and contractor firms; the mechanisms for monitoring, enforcement, renewal, or termination of contracts; the duration and certainty of contract renewal; and the business model of contractors.

Finally, some studies show that the jobs and conditions for managerial and professional employees may improve when they move to specialized contractors. Dieticians and food service managers, for example, generally have better job promotion opportunities if they work for a contract food service company than if they are the direct-hire employee of an individual hospital, school, or other establishment with a cafeteria (Erickcek, Houseman, and Kalleberg 2003). By contrast, research on the unbundling of corporate functions (law, accounting, HR functions, shared services) provides no clear evidence regarding the quality of jobs in outsourced high-skilled occupations (Sako,

Chondrakis, and Vaaler 2013). Where access to specialized services is the driving force in interfirm contracting, human capital theory suggests that pay and working conditions should depend on the degree of specialization in each node of the network.

In sum, the preponderance of theory predicts that workers in outsourced operations will experience lower wages and job quality, and a handful of empirical studies support this claim, but only for low-wage workers. But the causal mechanisms remain unclear or unspecified. More broadly, there is a clear need for systematic empirical research that identifies a wider range of outsourcing models and documents the relationship between the type of outsourcing and the quality of jobs and inequality, specifies the causal mechanisms in this relationship, and identifies the institutional conditions under which these relationships hold.

5. The State of Data on the Prevalence of and Growth in Domestic Outsourcing

Most available data point to significant growth in domestic outsourcing in recent years. Nevertheless, there are substantial gaps and, likely, biases in these data. In this section, we review available evidence of the prevalence of and growth in domestic outsourcing, discuss the limitations of existing data, and argue for the urgent need for better information.

Evidence on Prevalence and Growth

Evidence from government establishment data

One way to get a sense of the scope of the growth in domestic contracting out is to examine employment growth in industries that primarily contract services to businesses. The relative employment growth of professional and business services is especially notable because other businesses are the principal consumers of these services, and consequently employment trends in this sector are often used as a key indicator of outsourcing growth.[5] The share of payroll employment in professional and business services has nearly doubled from 7.3 to 13.9 percent since 1970. Within professional and business services, about half of the growth was accounted for by industries primarily employing workers in professional occupations (e.g., computer systems and

5 Data on payroll employment come from the Current Employment Statistics (CES) program, a monthly establishment survey conducted by the Bureau of Labor Statistics.

management and technical consulting) and about half in industries primarily employing workers in nonprofessional occupations (e.g., security services, services to buildings and dwellings, and temporary help and other staffing services).

While employment growth in professional and business services provides a useful indicator of the growth of domestic outsourcing in the U.S., it is crude. Consumers account for some of the higher demand for professional and business services, such as legal services. Moreover, contract workers are employed in all sectors, and consequently a focus only on the professional and business services sector will miss important developments occurring in other segments of the economy.[6]

Input-output data developed by the U.S. Bureau of Economic Analysis (BEA), in contrast, provide a natural tool to comprehensively examine growth in domestic outsourcing. Input-output (I-O) tables show the dollar value of the intermediate inputs one industry uses from itself and from others, and any increase in outsourcing should appear as an increase in the use of intermediate inputs by the outsourcing industry.[7] By linking the industry providing the contract services with the user industry, input-output data show not only trends in outsourcing but also variations across industries in outsourcing patterns.[8] In addition, I-O data, in combination with employment data in the contract industry, permit estimation of the number of workers affected by outsourcing.

Several studies have relied on I-O data to document the growth of domestic outsourcing in the U.S. Using data on the input-output structure of the economy, Yuskavage, Strassner, and Medeiros (2008) report that the share of GDP accounted for by domestic providers of outsourcing services—which they defined as purchased services excluding telecommunications and financial services—rose from 7 percent to 12 percent between 1982 and 2006. Similarly, Berlingieri (2014) uses input-output data for the U.S. economy to examine the extent to which the shift in U.S. employment from manufacturing to services is the result of outsourcing. Controlling for changes over time in demand for manufactured products and services, he concludes that a substantial share of the increase in services employment and the decline in manufacturing employment is the consequence of outsourcing. Services previously housed in manufacturing firms have been outsourced to service firms, highlighting the importance of outsourcing to professional and business services as noted

6 For example, food services contractors and airport and airline contractors are not classified in the professional and business services sector, but instead are identified with their own codes under food services and support activities for transportation, respectively. In other cases, contractors are not identified by distinct codes and are grouped with other establishments in a given industry (e.g., in mining and telecommunications, see Weil [2014]). In these cases, subcontracting will show up as own-industry inputs in the I-O data – i.e., inputs purchased by firms classified in the same industry. The increased share of employment in professional and business services also could reflect other compositional changes, such as an increase in the relative size of industries that outsource, and do not solely reflect changing staffing practices within industries.

7 Dollar values in the annual I-O tables may be deflated by the appropriate price indexes to yield real growth in outsourcing.

8 I-O data can show differences in outsourcing across industries but not across firms within industries. In Section 6 we propose industry studies that, among other things, will help us understand variation in outsourcing practices among firms.

above. Other evidence supports this conclusion. Dey, Houseman, and Polivka (2012) estimate that by 2006, staffing services (primarily temporary agencies) added close to 10 percent to employment in manufacturing establishments, compared to just 2 percent in 1989. Currently about half of the workers needed for the production of manufactured goods are employed outside the manufacturing sector (Timmer, Los, and de Vries 2015; Houseman 2014).

Evidence from government household surveys

While statistics on industry employment and input-output tables are derived from business surveys, government household surveys provide some additional evidence of the magnitude of the contract workforce. Most notably, the Supplement on Contingent and Alternative Work Arrangements (CWS) to the Current Population Survey (CPS), which was conducted five times between 1995 and 2005, asks individuals about their status as temporary help workers, independent contractors (including independent contractors and freelance workers), or contract company workers. With respect to the last category, the survey focuses only on individuals who work for a company that primarily contracts their services to one organization and who work at that client's worksite. This is a subset of contract company workers, many of whom work off-site or at multiple client sites. One valuable feature of the CWS is that it surveyed contract and temporary agency workers on the industry of the client firm, and so constitutes the only source in federal statistics on where these types of workers perform services.

In the 2005 survey, 7.4 percent of workers identified themselves as independent contractors, independent consultants, or freelance workers. Another 0.9 percent and 0.6 percent indicated that they worked, respectively, for temporary help agencies and other companies that contracted out their services to one client (BLS 2005). The estimated share of the workforce in temporary help agencies from the CWS, however, is roughly half the estimated share as measured from the BLS establishment, which, as we discuss below, raises questions about the accuracy of estimates from the CWS.

In 2015, the Rand American Life Panel Survey included many of the same questions asked on the CWS (last conducted in 2005), along with questions on workers' use of online platforms (Krueger 2016). This new survey evidence suggests significant growth over the last decade in various types of nonstandard employment arrangements, particularly in on-site contract workers. The share of respondents identifying themselves as contract workers who work at the client's worksite jumped by more than fivefold from 0.6 percent in the 2005 CWS to 3.1 percent in the 2015 American Life

Panel Survey.[9] The share participating in on-line "gig" work is small, accounting for only 0.5 percent of employment, according to the survey estimates.

Evidence from employer surveys, industry research, and case studies

Drawing on a combination of government data, private surveys, and other proprietary sources of information, researchers and analysts have been able to generate industry- or function-specific estimates of the prevalence of (and sometimes trends in) domestic outsourcing. In addition, case studies have provided detailed descriptions of the evolution of supply chains.

Academic researchers have conducted a number of employer surveys that, dating back to the late 1980s, have pointed to the high incidence of and growth in domestic outsourcing (e.g., Abraham 1990; Houseman 2001; Kalleberg, Reynolds, and Marsden 2003; Nielson and Sturgeon 2014). For example, using information from the 2010 National Organizations Survey, which included questions on private sector business use of contractors for various functions, Nielsen and Sturgeon (2014) summarize the percent of businesses using domestic contractors for facilities management (34 percent), IT systems (34 percent), transportation services (30 percent), sales and marketing (22 percent), R&D (20 percent), management, administration and back-office functions (14 percent), and customer service (12 percent). A 2003 establishment-level survey of U.S. call centers estimated that almost 15 percent of centers at the time were outsourced operations, but because they were larger in size they employed almost 50 percent of call center workers (Batt, Doellgast, and Kwon 2006: 336; additional Batt calculations of original data).

Information routinely collected by consulting firms and industry trade groups on outsourcing offers provides another source of nongovernmental data. Multiple surveys conducted by national consulting firms have found that a majority of firms contract out at least some of their HR functions, including payroll and benefits administration, background checks, training, and recruitment (Greer, Youngblood, and Gray 1999). IT services constitute an important share of services outsourcing, including data centers, help desk services, and training (Sharpe 2001). Industry-specific surveys show substantial rates of contracting out for a wide range of functions across many industries. One summary of proprietary data on insurance companies found high rates of contracting out for a diverse set of services (Greenwald 1999). Almost 90 percent of survey respondents reported that at least some use contractors for employee benefits administration. For other services, the comparable figures were 85 percent for legal services, 81 percent for cafeteria services, 77 percent for janitorial and housekeeping, 61 percent for security, 58 percent for payroll

9 Although the survey results are intended to be comparable to those from the CWS, the American Life Panel's use of an on-line survey format and possibly other methodological differences could account for some of the apparent growth in contract and other nonstandard employment arrangements.

processing, and 47 percent for loss control. Similar surveys exist for air transportation, banking, communications, construction, health care, hospitality, manufacturing, mining, pharmaceuticals, and retail, among others (Bernhardt and Garrick 2013). Although the quality and representativeness of specific data from consulting firms and industry trade groups are often hard to assess, the evidence from these sources consistently points to a high incidence of contracting out of many business functions.

Researchers have also conducted industry case studies that yield detailed descriptions of the evolution of supply chains. The critically important logistics sector is a case in point. Deregulation of freight transportation in the 1980s, developments in information technology in the 1990s, and growth of complex global supply chains have resulted in significant growth of outsourcing in logistics (Bonacich and Wilson 2008). Examples include the shift to independent contractor drivers in trucking and the growth of delivery services such as FedEx based on that model; the contracting out of warehouses; and the rise of third-party logistics (3PL) companies to which businesses outsource the management, transportation, and storage of goods and information in their supply chains. Studies have described the dramatic rise during the 1990s and 2000s in U.S. manufacturers' outsourcing of transportation and warehousing, once core functions of manufacturing firms (Baker and Hubbard 2003; Lieb and Bentz 2005; Belzer 2002; Armbruster 2003). Use of 3PLs is common in all sectors, however, including retail, hospitality, food and beverage, construction, and energy (Langley and Capgemini Consulting 2015). Large companies commonly use multiple 3PLs and hire a firm to manage its outsourced logistics functions (so-called fourth-party logistics companies, or 4PLs). Recent survey evidence suggests that logistics outsourcing accounts for about half of business spending on transportation and close to 40 percent of spending on warehouse activities (Leuschner et al. 2014). Third- and fourth-party logistics companies are classified in various industries, including warehousing, transportation, and wholesale trade, making it difficult to observe trends in logistics contracting from published government statistics.[10]

Data Limitations

While case studies have provided important insights into the growth of contracting out in various sectors, the information is inherently fragmented and of varying quality. In theory, surveys conducted by the U.S. statistical agencies should provide more systematic time-series data for

10 Other research has documented the growth in outsourcing of janitorial and security functions (Dube and Kaplan 2010), food services (Lane et al. 2003), and call centers (Batt, Holman, and Holtgrewe 2009; Batt, Doellgast, and Kwon 2006).

understanding the extent of outsourcing, its growth, and implications for workers and public policy. But official statistics have substantial limitations.

BEA input-output data are useful for showing broad trends in domestic outsourcing in the national economy and for identifying which industries that provide intermediate goods and services are expanding. They are less useful, however, for identifying the user industries of specific intermediates because the data on which the I-O tables depend are often dated and suffer from significant gaps. Although annual industry surveys conducted by the census are used to update the I-O tables, the most detailed information for estimating the I-O structure of the economy comes from the Economic Census, conducted every five years. BEA uses information from the Economic Census and other sources to revise the I-O tables (and other national accounts), and it typically takes 5 or more years to integrate the latest Economic Census data into the accounts. Thus, at any point in time, much of the information used to estimate the I-O structure of the economy is 5 to 10 years old.

More important, while the Economic Census collects detailed information on material input purchases, information in the Economic Census and annual census surveys on purchased services is generally collected for highly aggregated categories. For example, census surveys ask companies to report expenditures on all professional and technical services. In addition, the data reported combine expenditures on domestic and imported goods and services.[11] In sum, published estimates of industry input use are often derived from limited information, and researchers should use them with caution.[12]

Workers in contract arrangements are employees of the company contracting their services or are self-employed as independent contractors. Household and establishment surveys conducted by the Bureau of Labor Statistics (BLS) do not systematically provide information on the characteristics of workers in various contract arrangements or the organizations using the contract services (see Bernhardt 2014). The Supplement on Contingent and Alternative Employment Arrangements to the CPS was designed to help fill this information gap. Concerns have been raised, however, about the ability of individuals (or family members answering on their behalf) to properly identify themselves as employed in a contingent or alternative work arrangement. As noted, the share of workers reporting themselves as employed by temporary help agencies in the CWS is considerably lower than

11 To estimate imported and domestic intermediate goods and services separately, BEA makes the assumption that each industry uses imported inputs in proportion to its overall use of the input in the economy.

12 In recent years, the Census Bureau has collected information on companies' expenditures on temporary help and professional employer organizations and has added questions to various surveys about whether companies use or provide contract manufacturing services. While the collection of such detailed data is currently piecemeal, it represents an important step toward improving data on outsourcing and will provide a more complete picture of the incidence across industries of certain types of contract arrangements.

the share derived from the establishment survey (CES), fueling concerns about the quality of data on workers in alternative arrangements. The most recent CWS survey was conducted in 2005, and budget problems stalled efforts to replicate it. The 2016 announcement that it will be conducted again in May 2017 is a welcome development. The narrow coverage of contract workers and concerns about data quality in earlier rounds of the CWS have limited its usefulness for understanding the scope of domestic contracting out and its implications for workers. Researchers have begun providing input to BLS and the Census Bureau that may improve the usefulness of the new data to be collected in 2017 and that may involve supplementing information collected in the CWS with new information from establishment surveys.

In sum, available information points to rapid growth in domestic outsourcing in a wide range of industries since the 1980s. Yet, data gaps limit our ability to understand the magnitude of the phenomenon and its impact on job quality, and to fashion appropriate policy responses. In the next section we lay out a major initiative on domestic outsourcing, detailing the questions it should answer and providing a menu of research methodologies and potential data sources.

6. A Proposed Research Agenda and Research Network on Domestic Outsourcing

In what follows, we propose a comprehensive agenda to deepen our understanding of domestic outsourcing and the development of a network of researchers to study this important phenomenon. We first lay out three central questions to advance our knowledge of how and why domestic contracting has expanded and its effects on jobs, wages, and inequality. Then we propose that research proceed on two parallel tracks that will inform one another. One track is to conduct in-depth industry studies; the second is to develop systematic measures of domestic outsourcing in government data, which will be necessary to understand the scope and implications of domestic contracting economy-wide.

Research Questions

We suggest that three broad questions should drive future research on domestic outsourcing. While no single study will be able to address all of these questions, they provide a conceptual roadmap for the knowledge base that needs to be created.

1. How common is domestic outsourcing, has it grown over time, and how many workers are affected?
    a. At the firm (or establishment) level, what is the prevalence of outsourcing, and has it grown over time? Possible measures include percent of firms that contract for particular functions, and firms' purchases of goods and services from other firms (or independent contractors) as a share of economic output.
    b. How many workers are employed by contractors, has that number grown over time, and do the workers differ in demographics from their in-house counterparts?
    c. In which industries are contract workers employed? How have jobs been reallocated across sectors over time as a result of domestic outsourcing?

2. What are the drivers of domestic outsourcing in particular industries or production networks, and what are the different forms it takes?
    a. What are the economic, political, and public policy forces that have shaped the prevalence of domestic outsourcing over time, and which functions are contracted out? Of particular interest is the impact of financialization as well as institutional factors (e.g., labor market and product market regulation, unions and social movements, consumer demands, and political pressures).
    b. What is the role of technology in facilitating domestic outsourcing and the forms it takes?
    c. Do contracting strategies vary by industry segment, ownership structure, business strategy, or other organizational characteristics? What explains variation in firms' contracting decisions within and across particular industries or product networks?
    d. What are the important characteristics and types of firm-to-firm contracting relationships? In particular, how is bargaining power distributed, and which actors in a production network are setting the economic terms of contracts? How are contractor industries changing over time, in terms of the degree of consolidation or competitiveness?
    e. Where relevant, what is the relationship between international outsourcing strategies and domestic outsourcing strategies? What determines the mix of the two strategies, and do they influence one another?

3. What is the effect of domestic outsourcing on job quality and the employment relationship?
    a. Job quality measures include wages, benefits, hours, workload, job stability, schedule stability, occupational safety and health, incidence of wage theft, and access to training and promotions.

b. The employment relationship refers to the worker's status under employment and labor laws (e.g., whether the worker is covered by those laws, who the employer of record is, whether the job is permanent or temporary).
c. What is the effect of domestic outsourcing on unionization and other sources of worker leverage in the labor market?
d. Does the impact of outsourcing on jobs and workers differ, and if so, what are the sources of that variation? In particular, what is the role of specialized skills or skill requirements of jobs?

Industry Studies

Few nationally representative datasets contain the types of measures and the detail needed to capture the outsourcing phenomenon and its effect on job quality. Aggregate data also does not lend itself to explaining the causal mechanisms linking changes in the organization of production to changes in the quality of jobs. Moreover, the characteristics of contracting (such as factors driving its use, its structure, and impacts on workers) vary substantially by industry and business function. A broad undertaking of industry and firm-based research that engages a cohort of researchers from diverse disciplines is needed to identify the factors that govern interfirm contractual relationships, including the important role of the lead firm's business strategy, the relative bargaining power of lead and contractor firms, and the effects of variation in these factors on wages and working conditions. In addition, because businesses increasingly rely on contracting and supply chain management, trade associations and marketing and consulting firms have become important players and may be the source of proprietary data on a range of important industry trends. As a result, our assessment is that better data are often available at the industry level.

We therefore propose the type of multi-method research design that is frequently used in industry studies, combining analysis of (a) government data, including micro data from government household and business surveys or administrative data (e.g., state Unemployment Insurance wage records data available through Census Data Research Centers); (b) proprietary or novel datasets from industry trade groups or marketing/consulting firms; (c) structured case studies[13] of a number of firms and contractors, ideally chosen to understand different types of contracting relationships; (d) interviews with industry experts, including unions where present, and analysis of industry trade press and management publications; and (e) new data collection where feasible. The exact mix of these components will vary across studies.

13 See, for example, the controlled case study design used by some researchers in Appelbaum, Bernhardt, and Murnane (2003).

Given the variation in contracting relationships across different industry contexts, researchers may decide to focus their studies in one of several ways:

- Contracting industries as the unit of analysis, such as financial services, retail, or hospitality.
- Contractor industries as the unit of analysis, such as professional and business services, including information technology services, third-party logistics companies, and online staffing platforms.
- Production networks as the unit of analysis, such as the health care sector, the logistics sector, or the food supply chain.
- Business functions as the unit of analysis (see Nielsen and Sturgeon [2014] for a well-developed categorization).

Examples of each of these approaches are found in the empirical studies we have cited in this paper. The contracting industry approach is illustrated in Weil (2014) and Ji and Weil (2015) on the hotel and other service industries. In this research, the authors combine extensive field research with proprietary data and government administrative data to capture the relationship between complex outsourcing structures, the quality of jobs, and labor law and safety and health violations. The contractor industry approach is represented in the extensive research on the temporary services industry, where the growth of the industry and its implications for workers compensation, job stability, and long-term employment and earnings trajectories were captured by combining government survey data (the Longitudinal Employer-Household Data and Occupational Employment Statistics), government administrative data, proprietary company data, and evidence from case studies and structured interviews.[14] Studies of the logistics industry draw on the production network approach; for example, Bonacich and Wilson (2008) combine industry data, interviews with industry experts, managers and workers, and archival research to map out and analyze the impact of the logistics revolution in the U.S., using southern California ports as their entry point. Finally, call center research has used the business function as the unit of analysis (Batt, Holman, and Holtgrewe 2009; Batt and Nohara 2009; Batt, Doellgast, and Kwon 2006). Given the lack of national data on business functions, that research combined extensive field work in companies with a nationally representative random survey of in-house and outsourced call centers whose frame drew on a database of 60,000 call center subscribers to a trade journal. Results showed systematic differences in the wages, benefits, job security, union coverage, and other job attributes of in-house and outsourced call center jobs.

14 Studies include Andersson, Holzer, and Lane (2005); Autor and Houseman (2006, 2010); Benner, Leete, and Pastor (2007); Hamersma, Heinrich, and Mueser (2014); Heinrich, Mueser, and Troske (2005, 2009); Houseman (2001); Houseman and Heinrich (2015); Kalleberg, Reynolds, and Marsden (2003); and Lane et al. (2003).

Even at the level of a specific industry, developing a research design to document and analyze domestic outsourcing is conceptually difficult. One approach, developed by Gary Gereffi to analyze commodity chains, identifies four analytical dimensions to consider: an input-output structure, a geographical configuration, a governance structure, and an institutional context (see Bair 2009). This approach may be useful because it highlights the importance of integrating an analysis of changes in the economic structure as well power relations that shape the distribution of outcomes among different firms and groups of workers.

Analyzing changes over time in domestic outsourcing

In examining changes in outsourcing over time, it is also important to consider a number of different scenarios (see Berlingieri 2014). Contracting firms may outsource a function that was previously performed in-house — either eliminating the in-house function or continuing to perform it while adding capacity via contractors. Firms may also contract for new functions that were never performed in-house in order to access new skills and technologies — and again, they may either eliminate outdated in-house functions or continue to perform them while adding new capacity via contractors. These changes in contracting can differ substantially in their impact on the distribution of jobs across firms and on wages and job quality.

Note also that firms' contracting decisions may change over time, with some functions being outsourced only to be brought back in-house later, as the circumstances specific to a firm change. More generally, in any industry at any point in time, some firms will outsource certain functions as others bring the same functions back in-house. In analyzing the effect of outsourcing over time in an industry or network, it will be important to identify the net changes that constitute trends, along with the drivers behind those trends and their implications for wages and working conditions.

In addition, important effects on wages and working conditions may originate from the contractor firms themselves. Contractor industries may consolidate or fragment; new business models and product markets may emerge; and regulatory or broader institutional contexts may change. Even if the prevalence of domestic outsourcing does not change, such shifts on the contractor side of the equation may have important implications for jobs and workers.

Candidates for study

In selecting industries or production networks for study, researchers should have some *a priori* evidence that a) the level of domestic outsourcing has significantly increased or the nature of interfirm contracting relationships has changed, and b) these changes have potentially important implications for compensation and other aspects of job quality. Based on our review of the existing

literature, some examples of important sectors for researchers to study include, but are not limited to, the following:

- Health care: hospitals, outpatient facilities, nursing homes, home health care[15]
- Logistics: transportation, warehousing, wholesale
- Professional and business services
- Computer and information technology
- Retail, restaurants, hotels, arts and entertainment
- Food supply chain
- Energy and utilities
- Finance, insurance, and real estate
- Pharmaceuticals, chemicals, and other bio-tech companies
- On-demand platforms: Uber, Upwork, TaskRabbit, etc.
- Public sector: federal, state, local

Beyond the choice of industry, we encourage researchers to focus on a range of occupations — from less-skilled to intermediate and higher-skilled groups. All are affected by the reorganization of production, and an important research task is to determine whether restructuring has similar or differential effects on distinct groups in the occupational hierarchy, potentially leading to greater or less inequality.

Economy-Wide Research and Data Development

The industry studies proposed above would largely exploit available data from government surveys and proprietary sources, combined with interview evidence, to shed light on the causes and consequences of outsourcing in key industries. In addition, despite its weaknesses, valuable insights may still be gained from using economy-wide data to arrive at benchmark prevalence estimates. For example, to our knowledge, no recent analysis has comprehensively examined patterns of growth in domestic outsourcing and the number and types of workers affected using input-output data and industry employment matrixes for the U.S. economy.[16] Similarly, tax data could be better leveraged to help resolve debates about the size of the independent contractor workforce.

15 A detailed discussion of health care restructuring as an illustrative example is available from the authors.

16 Clinton (1997) provides a useful example of triangulating trends in domestic contracting from employment, occupational, and industry output and input data.

Nevertheless, a more complete understanding of domestic outsourcing in the economy will require the development of new, nationally representative data sources. We encourage work on two fronts. The first involves making better use of existing data by enabling the linking of both survey and administrative micro data collected by different government agencies. Plans to add micro data from BLS surveys in centers that currently house only census data offer great promise for research on domestic outsourcing. Linking data from the Occupational Employment Statistics program and the National Longitudinal Survey to existing data in these centers, for example, would give researchers a powerful tool for studying outsourcing and should be given high priority.

The second involves new data collection. Academic researchers and staff of government statistical agencies should join efforts to develop new measures and data sources that will allow precise estimates of domestic outsourcing and direct analysis of its impact on job quality. Given the significant budget constraints on federal agencies, the priority should be on identifying ways to leverage existing government surveys to gather more detailed data, add new measures, and expand sampling frames; private funding could help pilot such changes. Academic researchers could also develop and test new surveys — for example, of on-demand workers — that could serve as models for future government surveys.

Information will need to be collected through a combination of household/worker-level surveys and establishment/firm-level surveys. Each has strengths and weaknesses, and the optimal respondent type will vary with the information being collected. Even basic information on the number of contract workers and their distribution by client industry (in addition to the industry of their employer) may need to be collected from multiple surveys and estimates may need to be modeled. Household surveys, such as the CWS, may provide the best vehicle for estimating the number of on-site contract workers who typically work for one client and also the industry of the client firm, though improvements to existing survey instruments may be desirable to reduce reporting error. In contrast, it is unlikely that information on off-site contracting relationships, which are more complex, can be reliably obtained from respondents to household surveys. This information will need to be collected through establishment or firm surveys, and the information collected in such surveys will be limited to information that businesses typically maintain for tax and other accounting purposes. Because businesses that outsource work do not systematically record information on the number of workers hired through contractors—only their expenditures on contract services—contract services expenditure data must be collected from businesses, and the number of contract workers by client industry must be modeled.[17]

17 Similarly, contract companies cannot consistently and reliably allocate their workers by client industry.

Finally, and equally important, rigorously studying the effects of outsourcing on job quality will often require the linking of data from various agencies at the federal and state level. This in turn will require greater cooperation among agencies and improved access for researchers to confidential government micro data. The planned addition of BLS data to existing census research data centers is a good start and should be expedited.

References

Abraham, Katharine G. 1990. "Restructuring the Employment Relationship: The Growth of Market-Mediated Work Arrangements." In *New Developments in the Labor Market: Toward a New Institutional Paradigm*, Katharine Abraham and Robert McKersie, eds. Cambridge, MA: MIT Press, pp. 85–119.

Akerlof, George A., and Janet L. Yellen. 1990. "The Fair Wage-Effort Hypothesis and Unemployment." *Quarterly Journal of Economics* 105(2): 255–283.

Andersson, Fredrik, Harry J. Holzer, and Julia I. Lane. 2005. *Moving Up or Moving On: Who Advances in the Labor Market?* New York: Russell Sage Foundation.

Appelbaum, Eileen, Thomas Bailey, Peter Berg, and Arne Kalleberg. 2000. *Manufacturing Advantage.* Ithaca, NY: Cornell University Press, ILR Imprint.

Appelbaum, Eileen, and Rosemary Batt. 2014. *Private Equity at Work: When Wall Street Manages Main Street.* New York: Russell Sage Foundation.

Appelbaum, Eileen, Annette Bernhardt, and Richard Murnane, eds. 2003 *Low-Wage America: How Employers are Reshaping Opportunity in the Workplace.* New York: Russell Sage Foundation.

Armbruster, William. 2003. "Stacking Up: Manufacturers are Pleased with Gains from Outsourcing of Warehouse Management." *Journal of Commerce* December: 1–7.

Autor, David H., and Susan N. Houseman. 2006. "Temporary Agency Employment: A Way Out of Poverty?" In *Working and Poor: How Economic and Policy Changes Are Affecting Low-Wage Workers*, Rebecca M. Blank, Sheldon H. Danziger, and Robert F. Schoeni, eds., New York: Russell Sage Foundation, pp. 312–337.

———. 2010. "Do Temporary Help Jobs Improve Labor Market Outcomes for Low-skilled Workers? Evidence from 'Work First.'" *AEJ: Applied Economics* 2(3): 96–128.

Bair, Jennifer. 2009. "Global Commodity Chains: Genealogy and Review." In *Frontiers of Commodity Chain Research*, Jennifer Bair, ed. Stanford: Stanford University Press, pp. 1–34.

Baker George P., and Thomas N. Hubbard. 2003. "Make versus Buy in Trucking: Asset Ownership, Job Design and Information." *American Economic Review* 93(3): 551–572.

Balland, Pierre-Alexandre, Mathijs De Vaan, and Ron Boschma. 2013. "The Dynamics of Interfirm Networks Along the Industry Life Cycle: The Case of the Global Video Game Industry, 1987–2007." *Journal of Economic Geography* 13(5):741–765.

Barenberg, Mark. 2015. *Widening the Scope of Worker Organizing: Legal Reforms to Facilitate Multi-Employer Organizing, Bargaining and Striking*. Roosevelt Institute Report. New York: Roosevelt Institute. http://rooseveltinstitute.org/widening-the-scope-of-worker-organizing/ (accessed February 16, 2016).

Barney, Jay. 1991. "Firm Resources and Sustained Competitive Advantage." *Journal of Management* 17(1): 99–120.

Barth, Erling, Alex Bryson, James C. Davis, and Richard Freeman. 2014. "It's Where You Work: Increases in Earnings Dispersion across Establishments and Individuals in the U.S." NBER Working Paper No. 20447. Cambridge, MA: National Bureau of Economic Research.

Batt, Rosemary, Virginia Doellgast, and Hyunji Kwon. 2006. "Service Management and Employment Systems in U.S. and Indian Call Centers." In *Brookings Trade Forum 2005: Offshoring White-collar Work—The Issues and Implications*, Susan M. Collins and Lael Brainard, eds. Washington, DC: Brookings Institution, pp. 335–372.

Batt, Rosemary, David Holman, and Ursula Holtgrewe. 2009. "The Globalization of Service Work: Comparative Institutional Perspectives on Call Centers." Introduction to a Special Issue of *Industrial and Labor Relations Review* 62(4): 453–488.

Batt, Rosemary, and Hiro Nohara. 2009. "How Institutions and Business Strategies Affect Wages: A Cross National Study of Call Centers." *Industrial and Labor Relations Review* 62(4): 533–552.

Belzer, Michael. 1994. "The Motor Carrier Industry: Truckers and Teamsters under Siege." In *Contemporary Collective Bargaining in the Private Sector*, Paula Voos, ed. Madison, WI: Industrial Relations Research Association, pp. 259–302.

———. 2002. "Technological Innovation and the Trucking Industry: Information Revolution and the Effect on the Work Process." *Journal of Labor Research* 23(2): 375–395.

Benner, Chris, Laura Leete, and Manuel Pastor. 2007. *Staircases or Treadmills? Labor Market Intermediaries and Economic Opportunity in a Changing Economy*. New York: Russell Sage Foundation.

Berger, Suzanne. 2005. *How We Compete: What Companies around the World are Doing to Make it in Today's Global Economy*. New York: Random House and Doubleday.

Berlingieri, Giuseppe. 2014. "Outsourcing and the Rise of Services." Centre for Economic Performance Working Paper No. 1199. London: London School of Economics and Political Science.

Bernhardt, Annette. 2014. "Labor Standards and the Reorganization of Work: Gaps in Data and Research." Institute for Research on Labor and Employment Working Paper No. 100-14. Berkeley: University of California, Berkeley.

Bernhardt, Annette, Heather Boushey, Laura Dresser, and Chris Tilly. 2008. "Introduction." In *The Gloves-Off Economy*. Annual Research Volume, Labor and Employment Relations Association. Champaign, IL: University of Illinois Press, pp. 1–29.

Bernhardt, Annette, Laura Dresser, and Erin Hatton. 2003. "The Coffee Pot Wars: Unions and Firm Restructuring in the Hotel Industry." In *Low-Wage America: How Employers are Reshaping Opportunity in the Workplace*, Eileen Appelbaum, Annette Bernhardt, and Richard Murnane, eds. New York: Russell Sage Foundation, pp. 33–76.

Bernhardt, Annette, and Jessica Garrick. 2013. "Interim Report: Research on the Prevalence and Impact of Subcontracting in the U.S." Manuscript. New York: National Employment Law Project. On file at the UC, Berkeley Institute for Research on Labor and Employment.

Bernhardt, Annette, Siobhan McGrath, and James DeFilippis. 2007. "Unregulated Work in the Global City: Employment and Labor Law Violations in NYC." New York: Brennan Center for Justice, New York University.

Boden, Leslie I., Emily A. Spieler, and Gregory R. Wagner. 2016. "The Changing Structure of Work: Implications for Workplace Health and Safety in the U.S." Paper prepared for the Future of Work Symposium, U.S. Department of Labor.

Blois, K. J. 1972. "Vertical Quasi Organization." *Journal of Industrial Economics* 20(3): 253–272.

Bonacich, Edna, and Jake Wilson. 2008. *Getting the Goods: Ports, Labor, and the Logistics Revolution*. Ithaca, NY: Cornell University Press, ILR Imprint.

Brav, Alon, Wei Jiang, and Hyunseob Kim. 2015. "The Real Effects of Hedge Fund Activism: Productivity, Asset Allocation, and Labor Outcomes." *Review of Financial Studies* 28(10): 2723–2769.

Brown, Clair, Timothy Sturgeon, and Julia Lane. 2014. "Using a Business Function Framework to Examine Outsourcing and Offshoring by U.S. Organizations." IRLE Working Paper No. 121-14. Berkeley, CA: University of California, Berkeley. http://irle.berkeley.edu/workingpapers/121-14.pdf (accessed February 16, 2016).

Cappelli, Peter, ed. 1999. *Employment Practices and Business Strategy*. Oxford: Oxford University Press.

Card, David, Thomas Lemieux, and W. Craig Riddell. 2004. "Unions and Wage Inequality." *Journal of Labor Research* 25(4): 519–559.

Chandler, Alfred. 1977. *The Visible Hand: The Managerial Revolution in American Business*. Cambridge, MA: Harvard University Press.

———. 1990. *Scale and Scope: The Dynamics of Industrial Capitalism*. Cambridge: Harvard University Press (with assistance from Takashi Hikino).

Clinton, Angela. 1997. "Flexible Labor: Restructuring the American Work Force." *Monthly Labor Review* 120(8): 3–17.

Coase, Ronald H. 1937. "The Nature of the Firm." *Economica* 4(16): 386–405.

Davis, Gerald. 2009. *Managed by the Markets: How Finance Reshaped America*. Oxford: Oxford University Press.

Davis, Gerald, and J. Adam Cobb. 2010. "Corporations and Economic Inequality around the World: The Paradox of Hierarchy." *Research in Organizational Behavior* 30: 35–53.

Deblaere, Jo G., and Jeffrey D. Osborne. 2010. "Industrialize and Innovate." *Outlook* (1).

Dey, Matthew, Susan Houseman, and Anne Polivka. 2010. "What Do We Know about Contracting Out in the United States? Evidence from Establishment and Household Surveys." In *Labor in the New Economy*, Katharine G. Abraham, James R. Spletzer, and Michael J. Harper, eds. Chicago: University of Chicago Press, pp. 267–304.

———. 2012. "Manufacturers' Outsourcing to Staffing Services." *Industrial and Labor Relations Review* 65(3): 533–559.

Doellgast, Virginia, Katja Sarmiento-Mirwaldt, and Chiara Benassi. 2016. "Institutions, Cost Structures, and the Politics of Externalization: Explaining Variation in Boundary Strategies for Call Center Jobs." *Industrial and Labor Relations Review*.

Doeringer, Peter J., and Michael Piore. 1971. *Internal Labor Markets and Manpower Analysis*. Lexington, MA: Heath Lexington Books.

Donaldson, Gordon. 1994. *Corporate Restructuring: Managing the Change Process from Within*. Cambridge, MA: Harvard Business School.

Dore, Ronald. 1986. *Flexible Rigidities: Industrial Policy and Structural Adjustment in the Japanese Economy, 1970–1980*. Palo Alto, CA: Stanford University Press.

Dube, Arindrajit, and Ethan Kaplan. 2010. "Does Outsourcing Reduce Wages in the Low-wage Service Occupations? Evidence from Janitors and Guards." *Industrial and Labor Relations Review* 63(2): 287–306.

Dyer, Jeffrey and Wujin Chu. 2000. "The Determinants of Trust in Supplier-Automaker Relationships in the U.S., Japan, and Korea. *Journal of International Business Studies* 31(2): 259–285.

Erickcek, George, Susan Houseman, and Arne L. Kalleberg. 2003. "The Effects of Temporary Services and Contracting Out on Low-Skilled Workers: Evidence from Auto Suppliers,

Hospitals, and Public Schools." In *Low-Wage America: How Employers Are Reshaping Opportunity in the Workplace*, Eileen Appelbaum, Annette Bernhardt, and Richard J. Murnane, eds. New York: Russell Sage Foundation, pp. 368–403.

Fields, Gary. 2004. *Territories of Profit: Communications, Capitalist Development, and the Innovative Enterprises of GF Swift and Dell Computer*. Palo Alto, CA: Stanford University Press.

Fine, Charles. 1998. *Clockspeed: Winning Industry Control in the Age of Temporary Advantage*. New York: Perseus Books.

Fixson, S.K. 2005. "Product Architecture Assessment: A Tool to Link Product, Process, and Supply Chain Design Decisions." *Journal of Operations Management* 23(3-4): 345–369

Fligstein, Neil. 1990. *The Transformation of Corporate Control*. Cambridge, MA: Harvard University Press.

Foley, Michael, John Ruser, Glenn Shor, Harry Shuford, and Eric Sygnatur. 2014. "Contingent Workers: Workers' Compensation Data Analysis Strategies and Limitations." *American Journal of Industrial Medicine* 57(7): 764–775.

Foulkes, Fred. 1980. *Personnel Policies in Large Nonunion Companies* New York: Prentice Hall.

Freeman, Richard. 2005. "China, India, and the Doubling of the Global Labor Force: Who Pays the Price of Globalization?" *Asia-Pacific Journal: Japan Focus* 3(8). http://apjjf.org/-richard-freeman/1849/article.html (accessed February 16, 2016).

Friedman, Milton. 1970. "The Social Responsibility of Business Is to Increase Its Profits." *New York Times Magazine*, September 13: 32–33, 122–124.

Gautie, Jerome, and John Schmitt. 2010. *Low-Wage Work in the Wealthy World*. New York: Russell Sage Foundation.

Gereffi, Gary, John Humphrey, and Timothy Sturgeon. 2005. "The Governance of Global Value Chains." *Review of International Political Economy* 12(1):78–104.

Goldschmidt, Deborah, and Johannes F. Schmieder. 2015. "The Rise of Domestic Outsourcing and the Evolution of the German Wage Structure." IZA Discussion Paper No. 9194. Bonn: Institute for the Study of Labor.

Gompers, Paul, and Andrew Metrick. 2001. "Institutional Investors and Equity Prices." *Quarterly Journal of Economics* 116(1): 229–259.

Gospel, Howard, and Mari Sako. 2010. "The Unbundling of Corporate Functions: The Evolution of Shared Services and Outsourcing in Human Resource Management." *Industrial and Corporate Change* 19(5): 1367–1396.

Greenwald, Judy. 1999. "Insurers Outsource More Functions." *Business Insurance* 33(34): 2–3.

Greer, Charles R., Stuart A. Youngblood, and David A. Gray. 1999. "Human Resource Management Outsourcing: The Make or Buy Decision." *Academy of Management Executive* 13(3): 86–96.

Grimshaw, Damian, Hugh Willmott, and Jill Rubery. 2005. "Inter-organizational Networks: Trust, Power, and the Employment Relationship," In *Fragmenting Work: Blurring Organizational Boundaries and Disordering Hierarchies*, Mick Marchington, Damian Grimshaw, Jill Rubery, and Hugh Willmott, eds. Oxford: Oxford University Press, pp. 63–88.

Hall, Brian J., and Jeffrey B. Liebman. 1998. "Are CEOs Really Paid like Bureaucrats?" *Quarterly Journal of Economics* 112(3): 653–691.

Hamersma, Sarah, Carolyn J. Heinrich, and Peter Mueser. 2014. "Temporary Help Work: Multiple Job-Holding and Compensating Differentials." *Industrial Relations* 53(1): 72–100.

Handwerker, Elizabeth. 2015. "Increased Concentration of Occupations, Outsourcing, and Growing Wage Inequality in the United States." BLS Working Paper. Washington, DC: Bureau of Labor Statistics.

Handwerker, Elizabeth, and James Spletzer. 2015. "The Concentration of Occupations and the Role of Establishments in Wage Inequality." IZA Discussion Paper No. 9294. Bonn: Institute for the Study of Labor.

Hayes, Robert H., and William J. Abernathy. 1980. "Managing our Way to Economic Decline." *Harvard Business Review* 58(4): 67–77.

Heinrich, Carolyn J., Peter R. Mueser, and Kenneth R. Troske. 2005. "Welfare to Temporary Work: Implications for Labor Market Outcomes." *Review of Economics and Statistics* 87(1): 154–173.

———. 2009. "The Role of Temporary-Help Employment in Low-Wage Worker Advancement." In *Studies of Labor Market Intermediation*, David H. Autor, ed. Chicago: University of Chicago Press, pp. 399–436.

Helper, Susan, John Paul MacDuffie, and Charles Sabel. 2000. "Pragmatic Collaborations: Advancing Knowledge While Controlling Opportunism." *Industrial and Corporate Change* 9(3): 443–488.

Helper, Susan, and Mari Sako. 2010. "Management Innovation in Supply Chain: Appreciating Chandler in the Twenty-First Century." *Industrial and Corporate Change* 19(2): 399–429.

Holmes, John. 1986. "The Organization and Locational Structure of Production Subcontracting." In *Production, Work, and Territory*, Allen Scott and Michael Storper, eds. Boston: Allen and Unwin, pp. 80–106.

Holmstrom, Bengt and Steven N. Kaplan. 2001. "Corporate Governance and Merger Activity in the United States: Making Sense of the 1980s and 1990s." *Journal of Economic Perspectives* 15(2): 121–144.

Houseman, Susan N. 2001. "Why Employers Use Flexible Staffing Arrangements: Evidence From an Establishment Survey." *Industrial and Labor Relations Review* 55(1): 149–170.

———. 2014. "Trade Competitiveness and Employment in the Global Economy." *Employment Research* 21(1): 1–4. http://research.upjohn.org/empl_research/vol21/iss1/1/ (accessed February 16, 2016).

Houseman, Susan, and Carolyn Heinrich. 2015. "Temporary Help Employment in Recession and Recovery." W.E. Upjohn Institute Working Paper No. 15-227. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research. http://research.upjohn.org/up_workingpapers/227/ (accessed February 16, 20016).

Houseman, Susan, and Machiko Osawa, eds. 2003. *Nonstandard Work in Developed Economies: Causes and Consequences*. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Jacobides, Michael G. 2005. "Industry Change through Vertical Disintegration: How and Why Markets Emerged in Mortgage Banking." *Academy of Management Journal* 48(3): 465–498.

Jacobides, Michael G., and Sidney G. Winter. 2005. "The Coevolution of Capabilities and Transaction Costs: Explaining the Institutional Structure of Production." *Strategic Management Journal* 26(5): 395–413.

Jacoby, Sanford. 1985. *Employing Bureaucracy: Managers, Unions and the Transformation of Work in American Industry 1900–1945*. New York: Columbia University Press.

Jaikumar, Ramchandran. 1986. "Postindustrial Manufacturing." *Harvard Business Review* 64(6): 69–76.

Jarrell, Gregg A. 1983. "State Anti-Takeover Laws and the Efficient Allocation of Corporate Control: An Economic Analysis of Edgar v. Mite Corp." *Supreme Court Economic Review* 2: 111–129.

Jensen, Michael. 1986. "Agency Costs of Free Cash Flow, Corporate Finance and Takeovers." *American Economic Review* 76(2): 323–329.

Jensen, Michael, and William Meckling. 1976. "Theory of the Firm: Managerial Behavior, Agency Cost, and Ownership Structure." *Journal of Financial Economics* 3: 305–360.

Jensen, Michael, and Kevin J. Murphy. 1990. "CEO Incentives—It's Not How Much You Pay But How." *Harvard Business Review* May-June: 138–153.

Ji, MinWoong, and David Weil. 2015. "The Impact of Franchising on Labor Standards Compliance." *Industrial and Labor Relations Review* 68(5): 977–1006.

Kalleberg, Arne. 2013. *Good Jobs, Bad Jobs*. New York: Russell Sage Foundation.

Kalleberg, Arne, Jeremy Reynolds, and Peter V. Marsden. 2003. "Externalizing Employment: Flexible Staffing Arrangements in U.S. Organizations." *Social Science Research* 32(4): 525–552.

Kochan, Thomas, Harry C. Katz, and Robert McKersie. 1986. *The Transformation of American Industrial Relations*. New York: Basic Books.

Kogut, Bruce, and Udo Zander. 1992. "Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology." *Organization Science* 3(3): 383–397.

Kraemer, K.L., and Jason Dedrick. 2002. "Strategic Use of the Internet and Ecommerce: Cisco Systems." *Journal of Strategic Information Systems* 11(1): 5–29.

Krueger, Alan B. 2016. "Work in the Sharing Economy." Presentation made at a session of the Labor and Employment Relations Association, Allied Social Sciences Association meeting, January 3, in San Francisco.

Lakhani, Tashlin, Sarosh Kuruvilla, and Ariel Avgar. 2013. "From the Firm to the Network: Global Value Chains and Employment Relations Theory." *British Journal of Industrial Relations* 51(3): 440–472.

Lane, Julia, Philip Moss, Harold Salzman, and Chris Tilly. 2003. "Too Many Cooks? Tracking Internal Labor Market Dynamics in Food Service with Case Studies and Quantitative Data." In *Low-Wage America: How Employers Are Reshaping Opportunity in the Workplace*, Eileen Appelbaum, Annette Bernhardt, and Richard J. Murnane, eds. New York: Russell Sage Foundation, pp. 229–269.

Langley, C. John, and Capgemini Consulting. 2015. *2015 Third-Party Logistics Study: The State of Logistics Outsourcing*. http://www.3plstudy.com/ (accessed February 16, 2016).

Langlois, Richard N. 1992. "Transaction Cost Economics in Real Time'. *Industrial and Corporate Change* 1(1): 99–127.

Lazonick, William. 1992. "Controlling the Market for Corporate Control: The Historical Significance of Managerial Capitalism." *Industrial and Corporate Change* 1(3): 445–488.

———. 2014: "Profits without Prosperity." *Harvard Business Review* September: 3–11.

Lepak, David P., and Scott A. Snell. 1999. "The Human Resource Architecture: Toward a Theory of Human Capital Allocation and Development." *Academy of Management Review* 24(1): 31–48.

Leuschner, Rudolf, Craig R. Carter, Thomas J. Goldsby, and Zachary S. Rodgers. 2014. "Third-Party Logistics: A Meta-analytic Review and Investigation of its Impact on Performance." *Journal of Supply Chain Management* 50(1): 21–43.

Lieb, Robert, and Brooks A. Bentz. 2005. "The Use of Third-Party Logistics Services by Large American Manufacturers: The 2004 Survey." *Transportation Journal* 44(2): 5–15.

Locke, Richard. 2013. *The Promise and Limits of Private Power Promoting Labor Standards in a Global Economy*. New York: Cambridge University Press.

Locke, Richard M., Fei Qin, and Alberto Brause. 2007. "Does Monitoring Improve Labor Standards? Lessons from Nike." *Industrial and Labor Relations Review* 61(1): 3–31.

MacDuffie, John Paul. 1995. "Human Resource Bundles and Manufacturing Performance: Organizational Logic and Flexible Production Systems in the World Auto Industry." *Industrial and Labor Relations Review* 48(2):197–201.

———. 2011. "Inter-organizational Trust and the Dynamics of Distrust." *Journal of International Business Studies* 42: 35–47.

MacDuffie, John Paul, and Susan Helper. 2006. "Collaboration in Supply Chains, With and Without Trust." In *The Corporation as a Collaborative Community: The Reconstruction of Trust in the Knowledge Economy*, Charles Hecksher and Paul S. Adler, eds. Oxford: Oxford University Press, pp. 417–466.

Milkman, Ruth. 2006. *L.A. Story: Immigrant Workers and the Future of the U.S. Labor Movement.* New York: Russell Sage Foundation.

———. 2008. "Putting Wages Back into Competition: Deunionization and Degradation in Place-Bound Industries." In *The Gloves-Off Economy*, Annette Bernhardt, Heather Boushey, Laura Dresser, and Chris Tilly, eds. Annual Research Volume, Labor and Employment Relations Association. Champaign, IL: University of Illinois Press, pp. 65–90.

Morris, J.A., 1999. "Injury Experience of Temporary Workers in a Manufacturing Setting: Factors that Increase Vulnerability." *Workplace Health & Safety* 47(10): 470.

Muzaffar, Saeher, Kristin Cummings, Gerald Hobbs, Paul Allison, and Kathleen Kreiss. 2013. "Factors Associated with Fatal Mining Injuries among Contractors and Operators." *Journal of Occupational and Environmental Medicine 55*(11): 1337–1344.

Nielsen, Peter, and Timothy Sturgeon. 2014. "Using Business Functions to Measure International Trade and Economic Globalization." Prepared for the International Conference on Trade and Economic Globalization, held September 29–October 1, 2014, in Aguascalientes, Mexico. http://unstats.un.org/unsd/trade/events/2014/mexico/documents/session3/Business%20Functions%20UNFOC%20final%20Sept29_2014.pdf (accessed Febraury 16, 2016).

Penrose, Edith. 1959. *The Theory of the Growth of the Firm*. Oxford: Basil Blackwell.

Piore, Michael. 1989. "Administrative Failure: An Hypothesis about the Decline of the US Union Movement in the 1980s." Unpublished paper. Cambridge, MA: Department of Economics, MIT.

Piore, Michael, and Charles Sabel. 1984. *The Second Industrial Divide: Possibilities for Prosperity*. New York: Basic Books.

Porter, Michael. 1985. *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: The Free Press.

Powell, Walter W. 1990. "Neither Market nor Hierarchy: Network Forms of Organization." *Research in Organizational Behavior* 12: 295–336.

Powell, Walter W., Kenneth W. Koput, Laurel Smith-Doerr. 1996. "Inter-organizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology." *Administrative Science Quarterly* 41(1): 116–145.

Prahalad, C.K., and Gary Hamel. 1990. "The Core Competence of the Corporation." In *Knowledge and Strategy*, Michael H. Zack, ed. Cambridge: Routledge, pp. 41–60.

Rebitzer, James B. 1995. "Job Safety and Contract Workers in the Petrochemical Industry." *Industrial Relations* 34(1): 40–57.

Rees, Albert. 1993. "The Role of Fairness in Wage Determination." *Journal of Labor Economics* 11(1): 243–252.

Rubery, Jill, Jill Earnshaw, and Mick Marchington. 2005. "Blurring the Boundaries to the Employment Relationship: From Single to Multi-Employer Relationships." In *Fragmenting Work: Blurring Organizational Boundaries and Disordering Hierarchies*, Mick Marchington, Damian Grimshaw, Jill Rubery, and Hugh Willmott, eds. Oxford: Oxford University Press, pp. 63–88.

Rugman, Alan, Jing Li, and Chang Hoon Oh. 2009. "Are Supply Chains Global or Regional?" *International Marketing Review* 26(4/5): 384–395.

Sako, Mari, George Chondrakis and Paul Vaaler. 2013. "How Do Firms Make-and-Buy? The Case of Legal Services Sourcing by Fortune 500 Companies?" Oxford University Working Paper. Oxford: Novak Druce Centre for Professional Firms.

Saxenian, AnnaLee. 1996. *Regional Advantage*. Cambridge, MA: Harvard University Press.

———. 2005. "From Brain Drain to Brain Circulation: Transnational Communities and Regional Upgrading in India and China Studies." *Comparative International Development* 40(2): 35–61.

Sharpe, Murem. 2001. "Outsourcing, Organizational Competitiveness and Work." *Journal of Labor Research* 18(4): 535–549.

Smith, Caroline K., Barbara A. Silverstein, David K. Bonauto, Darrin Adams, and Z. Joyce Fan. 2010. "Temporary Workers in Washington State." *American Journal of Industrial Medicine* 53(2): 135–145.

Sturgeon, Timothy. 2002. "Modular Production Networks. A New American Model of Industrial Organization." *Industrial and Corporate Change* 11(3): 451–496.

Teece, David J. 1988. "Technological Change and the Nature of the Firm." In *Technical Change and Economic Theory*, Giovanni Dosi, Christopher Freeman, Richard Nelson, Gerald Silverberg, and Luc Soete, eds. London and New York: Pinter Publishers, pp. 256–281.

Teece, David, Gary Pisano, and Amy Shuen. 1997. "Dynamic Capabilities and Strategic Management." *Strategic Management Journal* 18(7): 509–533.

Timmer, Marcel P., Bart Los, and Gaaitzen J. de Vries. 2015. "Incomes and Jobs in Global Production of Manufacturers: New Measures of Competitiveness Based on the World Input-Output Tables." In *Measuring Globalization: Better Trade Statistics for Better Policy*, Susan N. Houseman and Michael Mandel, eds. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, pp. 121–164.

Ulrich, Karl T., and Steven D. Eppinger. 1995. *Product Design and Development*. 1st ed. New York: McGraw-Hill.

Useem, Michael. 1996. *Investor Capitalism: How Money Managers are Changing the Face of Corporate America*. New York: Basic Books.

Uzzi, Brian. 1996. "The Sources and Consequences of Embeddedness for the Economic Performance of Organizations: The Network Effect." *American Sociological Review* 61(4): 674–698.

Weil, David. 2014. *The. Fissured Workplace*. Cambridge, MA: Harvard University Press.

Williamson, Oliver. 1975. *Markets and Hierarchies: Analysis and Antitrust Implications*. New York: Free Press.

———. 1985. *The Economic Institutions of Capitalism*. New York: Free Press.

Yuskavage, Robert E., Erich H. Strassner, and Gabriel W. Medeiros. 2008. "Outsourcing and Imported Services in BEA's Industry Accounts." In *International Flows of Invisibles: Trade in Services and Intangibles in the Era of Globalization*, Marshall Reinsdorf and Matthew Slaughter, eds. Chicago: University of Chicago Press, pp. 247–288.

Zorn, Dirk M. 2004. "Here a Chief, There a Chief: The Rise of the CFO in the American Firm." *American Sociological Review* 69(June): 345–364.

Zorn, Dirk, Frank Dobbin, Julian Dierkes, and Man-Shan Kwok. 2005. "Managing Investors: How Financial Markets Reshaped the American Firm." In *The Sociology of Financial Markets*, Karen Knorr-Cetina and Alex Preda, eds. Oxford: Oxford University Press, pp. 269–289.